

Service Manual

Wireless System and Digital Transmitter



SH-FX65TGC/GT

SE-FX65GC/GT

SH-FX65GC
SH-FX65GT
SE-FX65GC
SE-FX65GT
SH-FX65TGC
SH-FX65TGT

Colour

(S).....Silver Type

(K).....Black Type (Only for SH-FX65TGC/GT)

Specification

■ RF SECTION

Wireless module

Frequency range 2.400 to 2.4835 GHz
Number of channels 3

■ AMPLIFIER SECTION

Output power

RMS output power

Surround Ch 125 W per channel (3Ω), 1 kHz, 10 % THD

Total RMS power 250 W

DIN output power

Surround Ch 70 W per channel (3Ω), 1 kHz, 1 % THD

Total DIN power 140 W

■ GENERAL

Power supply AC 110 to 240 V, 50/60Hz

Power consumption

SH-FX65T 1.5 W

SE-FX65 43 W

Dimensions (W x H x D)

SH-FX65T 65 mm x 52 mm x 8.6 mm

SE-FX65 165 mm x 90 mm x 164 mm

Mass

SH-FX65T 0.02 kg

SE-FX65 0.655 kg

Operating temperature range +5 °C to +35 °C

Operating humidity range 5 % to 90 % RH (no condensation)

Power consumption in off mode approx. 0.3 W

Notes:

1. Specifications are subject to change without notice.

Mass and dimensions are approximate

2. Total harmonic distortion is measured by a digital spectrum analyzer

Power supply:

This model uses Switching Mode Power Supply (SMPS) Module for powering the receiver unit. It is replaceable as an assembly unit.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Note

1.1. System Combination Breakdown

Note: The diagrams below show the breakdown for the digital transmitter and wireless system.

For SH-FX65GC-S

Digital Tx & Rx System	SH-FX65GC-S
Wireless Transmitter	SH-FX65TGC-K
Wireless Receiver	SE-FX65GC-S

For SH-FX65GT-S

Digital Tx & Rx System	SH-FX65GT-S
Wireless Transmitter	SH-FX65TGT-K
Wireless Receiver	SE-FX65GT-S

2 Safety Precautions

2.1. GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

2.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and 5.2Ω .

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

2.1.2. LEAKAGE CURRENT HOT CHECK (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

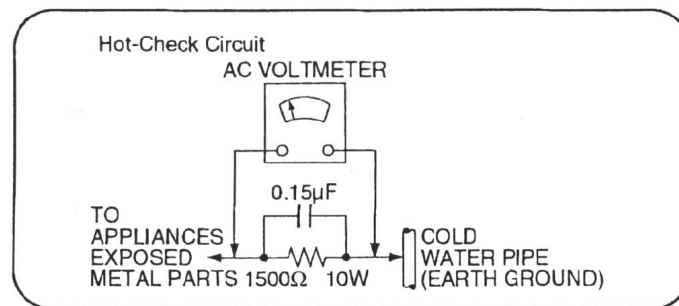


Figure. 1

2.2. Caution for AC Cord



(For “GC” area code model only.)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OFF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted, please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:


Blue: Neutral

Brown: Live

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.

The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

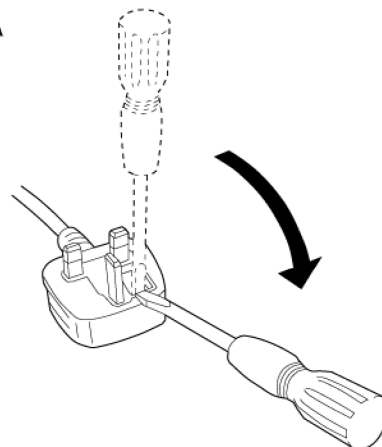
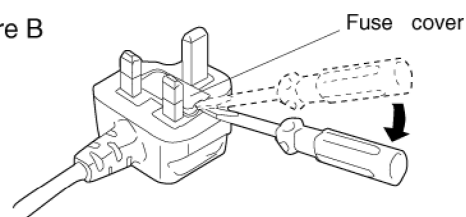


Figure B



2. Replace the fuse and close or attach the fuse cover.

Figure A

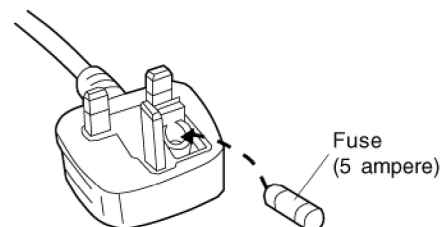
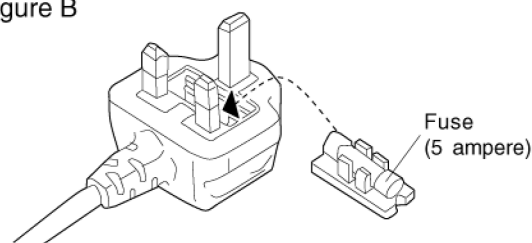


Figure B



2.3. Before Repair and Adjustment (Digital Receiver SE-FX65)

This model uses switching mode power supply (SMPS) module to provide the necessary voltages for the receiver (SE-FX65GC/GT)

DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may destroy solid state devices.

After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at AC 110-240V, 50/60Hz in NO SIGNAL mode (at volume minimum) should be ~200 mA.

2.4. Protection Circuitry

The protection circuitry may have operated if either of the following conditions are noticed:

- No sound is heard when the power is turned on.
- Stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

2.5. Safety Part Information

Safety Parts List:

There are special components used in this equipment which are important for safety. These parts are marked by \triangle in the Schematic Diagrams & Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

Table 1

Reference No.	Part No.	Part Name & Description	Remarks
18	N0AE6GY00001	SMPS MODULE	[M] \triangle
A1	K2CA2CA00027	AC CORD	[M] \triangle GT
A1	K2CQ2CA00002	AC CORD	[M] \triangle GC
A1	K2CT3CA00004	AC CORD	[M] \triangle GC
F1	K5D312BNA005	FUSE	[M] \triangle

3 Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminium foil, to prevent electrostatic charge build up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

4 Handling the Lead-free Solder

4.1. Service caution based on legal restrictions

4.1.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. (See right figure)	PbF
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Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
(Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

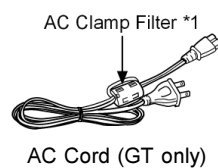
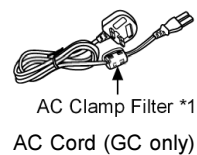
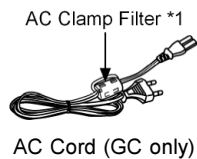
- The following 3 types of lead free solder are available through the service parts route.
RFKZ03D01K----- (0.3mm 100g Reel)
RFKZ06D01K----- (0.6mm 100g Reel)
RFKZ10D01K----- (1.0mm 100g Reel)

Note

* Ingredient: Tin (Sn), 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

5 Accessories

Note : Refer to Packing Materials & Accessories Parts List (Section 22) for the part number.



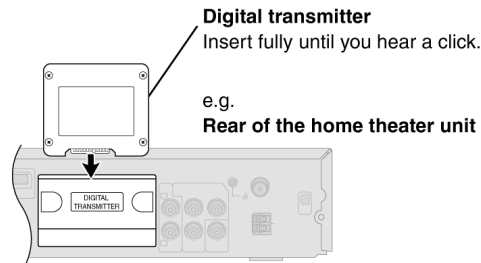
- **Special Note:**

*1: AC clamp filter is to be attached to the AC cord used for the wireless receiver unit (SE-FX65).

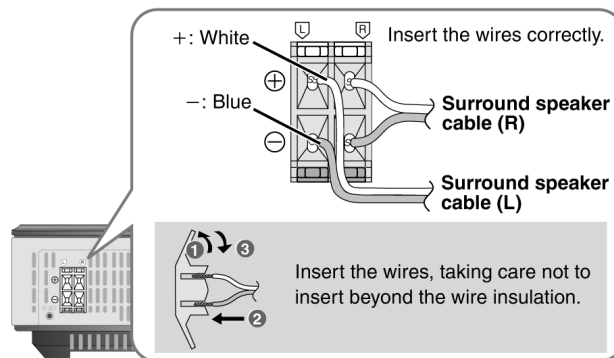
6 Using of Digital Receiver Unit

6.1. Connecting the digital transmitter (SH-FX65T)

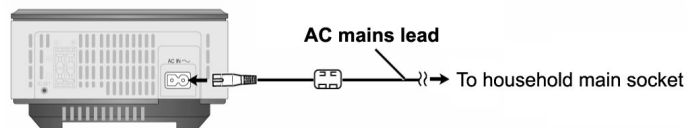
Do not insert or remove while the home theater unit is on.



6.2. Connecting the surround speaker cables to the wireless system (SE-FX65)



6.3. AC Power Cord connection (SE-FX65)






6.4. Making the wireless link (SE-FX65)

1 Turn on the wireless system.

Unit on/off button [I,]

Use this button to turn the unit on and off.

 I: The unit is on.  : The unit is off.



AUTO OPERATION ON/OFF indicator

The indicator lights red when the unit is turned on and lights green when the wireless link is activated.

When the wireless link is inactive for a long time, it turns red.

2 Turn on your home theater unit and check the wireless link indicator on the home theater unit.

e.g. Display on the home theater unit



“WI” or an indicator should light up.

- If “WI” or an indicator is flashing, refer to Troubleshooting guide.

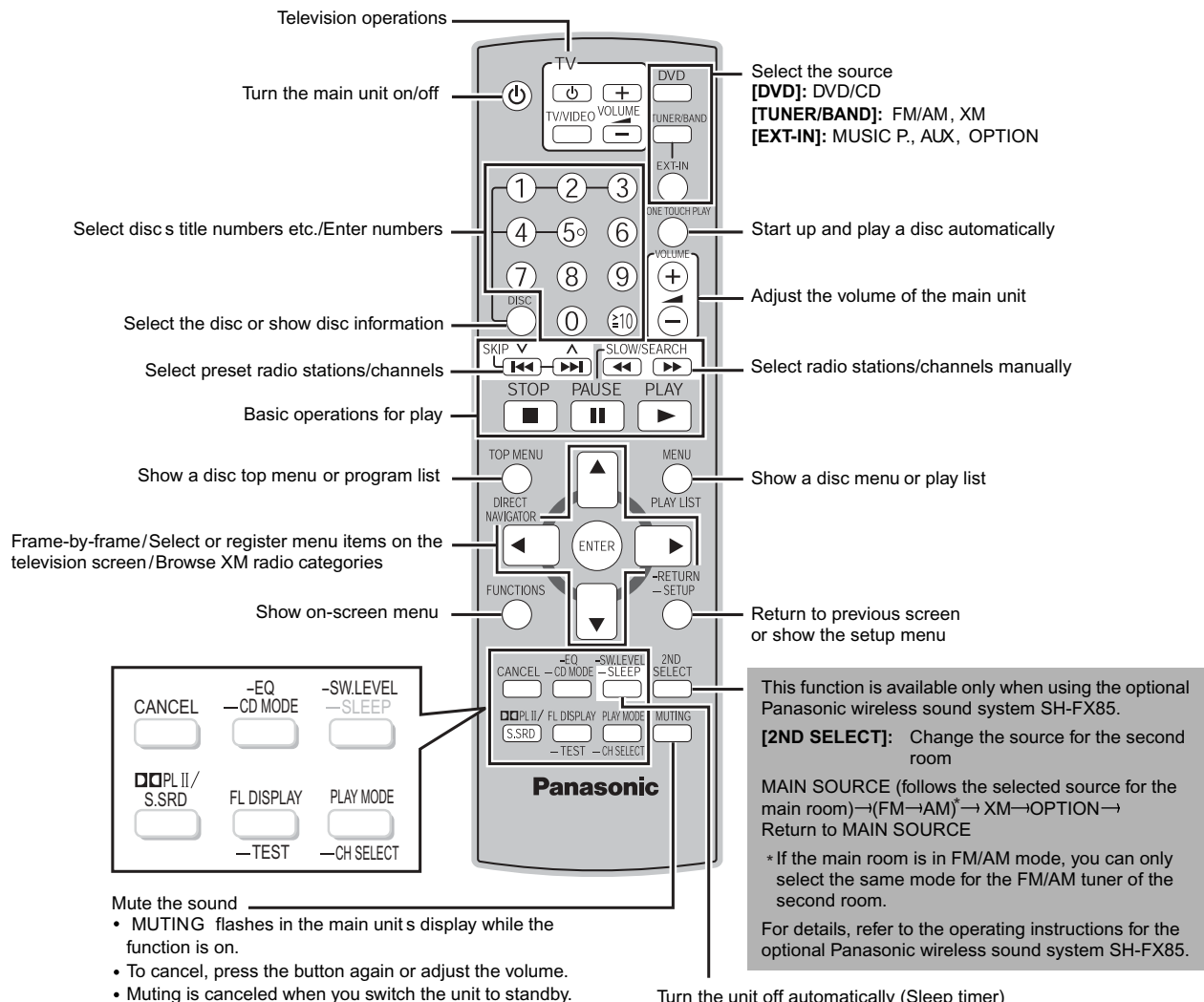
3 Start play on the home theater unit.

Conserving power

The wireless system consumes a small amount of power, even when it is off (approx. 0.3 W). To save power when the unit is not to be used for a long time, unplug it from the household mains socket.

7 Operation Procedures

7.1. Remote Control Key Buttons Operations



7.2. Main Unit Key Buttons Operations

Standby/on switch [POWER $\odot/1$]

Turn the main unit on/off.

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

5 DISC SELECTOR

Select a disc directly

■ / -TUNE MODE / FM MODE

Stop playing/
Select the tuning mode
Adjust the FM reception condition

▲ OPEN/CLOSE

Open/Close the disc drawer

▶ / MEMORY

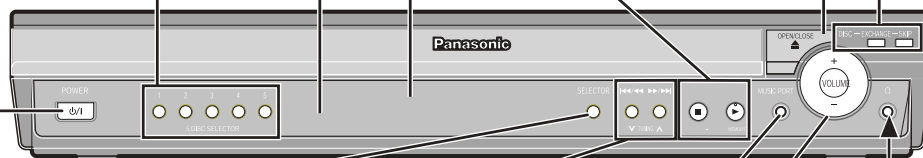
Play discs/
Memorize the receiving
radio stations/channels

DISC EXCHANGE

Open the disc drawer to
exchange the disc in the play
position

DISC SKIP

Skip to the next disc tray



SELECTOR

DVD/CD → FM → AM → XM →
AUX → MUSIC P. → OPTION →
Return to DVD/CD

⏮/⏪, ⏩/⏭ / √ TUNING ▲

Skip or slow-search play/
Select the radio stations/channels

MUSIC PORT

Connect an external
device



Adjust the volume
of the main unit.

Headphones
(not included)

Headphone plug type:
∅ 3.5 mm (1/8") stereo mini plug

- Reduce the volume before connecting.
- Audio is automatically switched to 2-channel stereo.
- To prevent hearing damage, avoid listening for prolonged periods of time.

8 New Features

8.1. Wireless Features

8.1.1. Function Overview

Year 2007 PT models support wireless which includes FX65/FX66, wireless subwoofer and FX85 as described below:-

8.1.1.1. FX65/FX66

- The FX65/FX66 supports one-way wireless transmission only, that is, it will only transmit wireless audio signal to the rear surround speakers. The FX65/FX66 receiver module includes a D-AMP and SMPS. The transmitter interfaces with the main unit using serial communications to communicate information such as mute command request, link detection and ID setting request. Maximum range attainable is 15 meters.

8.1.1.2. Wireless Subwoofer (For PT1050 only)

- The wireless subwoofer receiver module is similar in operation with FX65/FX66 in such a way that it only supports one-way wireless transmission. It also includes a D-AMP and SMPS. The difference in the wireless subwoofer receiver module is the way its hardware interprets the audio it receives from the transmitter since it is the same audio received by the FX65/FX66 receiver. Maximum range attainable is 30 meters.

8.1.1.3. FX85

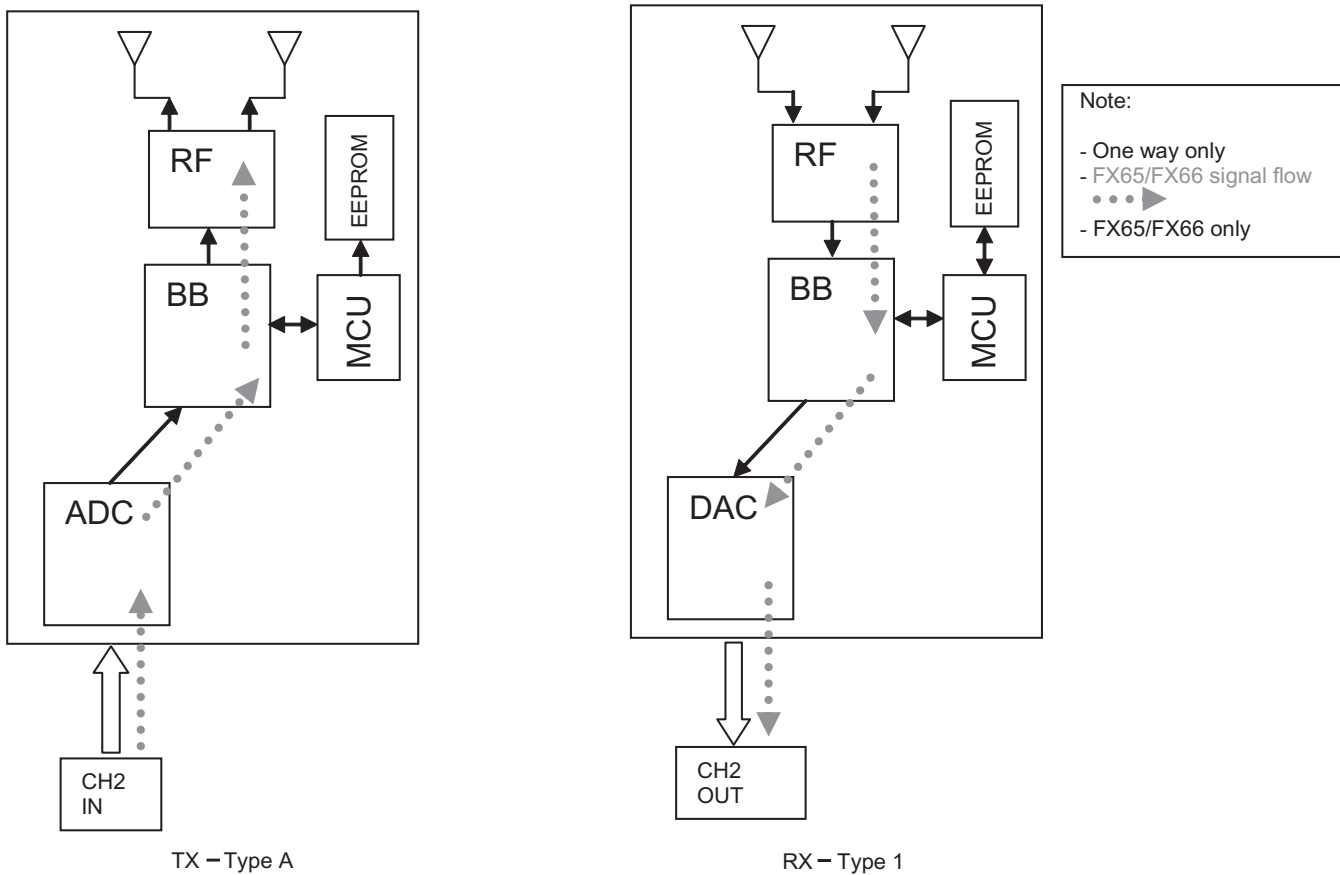
- The FX85 supports the multi-room function wherein it operates as a second room wireless receiver (up to a maximum of two). Maximum range attainable is 30 meters. It can send commands to the main unit to control functions such as Play, Stop, Forward Skip/Channel Up, Reverse Skip/Channel Down. It also has a built-in DAP pocket for stand-alone operation by inserting a DAP device (e.g. iPod) in the DAP pocket to play the device only via the device's own control buttons, FX85 cannot control the device using its own buttons. The transmitter interfaces with the main unit using serial communications to communicate information such as mute command request, link detection, ID setting request and button commands from the FX85 buttons (Play, Stop, Forward Skip/Channel Up, Reverse Skip/Channel Down). The FX85 receiver module has the following functions/terminals/buttons:

FX85 BUTTONS	FX85 FUNCTIONS
FX 85 Power Button	D-Amp
Selector Button	SMPS
Play Button	D-Port Connector
Stop Button	ID Set Switch
Forward Skip/Channel Up	MPort
Reverse Skip/Channel Down	
Volume Control	

8.1.2. Block Diagram

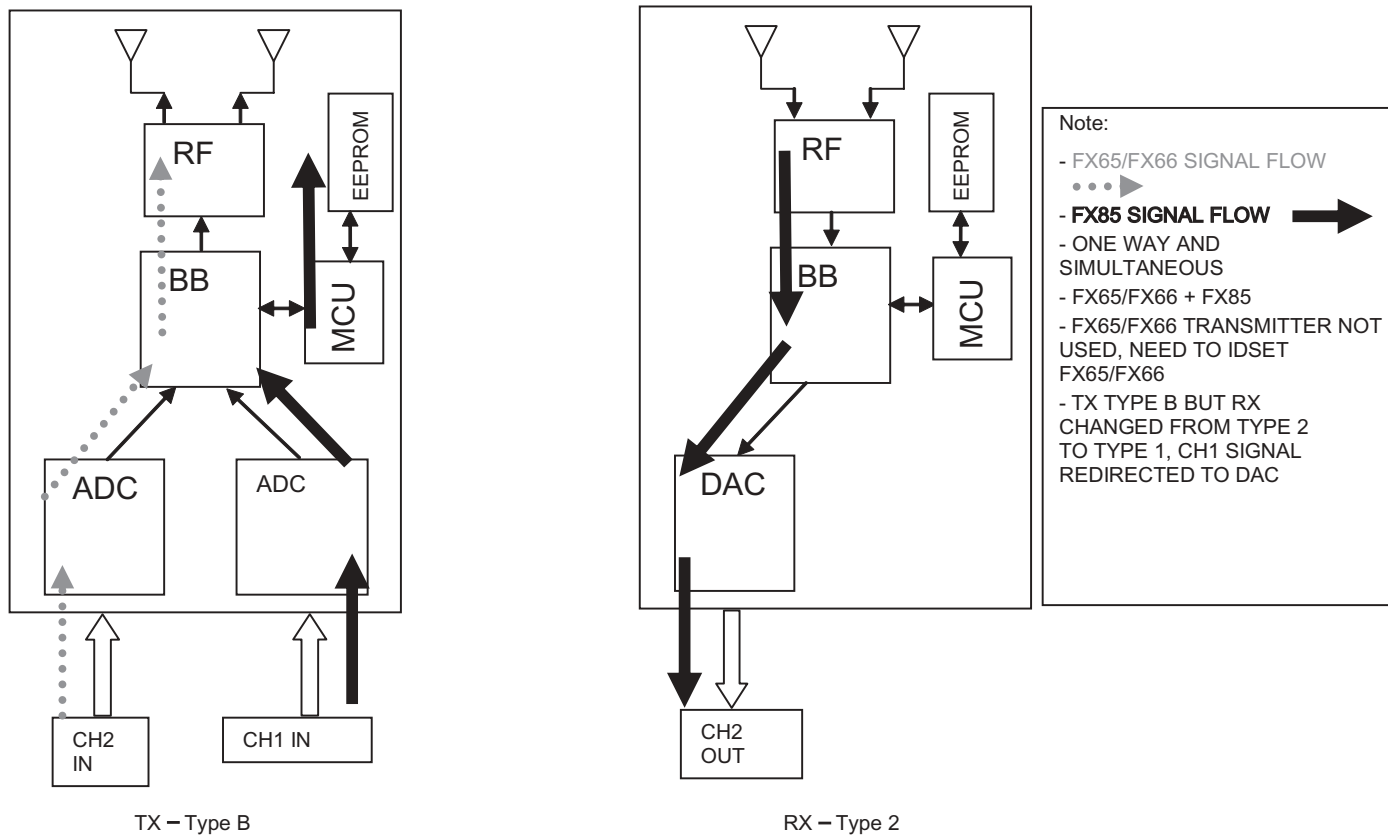
- There are two types of transmitter cards, Type A and Type B, and two types of receiver modules, Type 1 and Type 2 for the wireless configuration. The block diagrams below describe the differences of each of the types.

8.1.2.1. TX-TYPE A / RX-TYPE 1



- Type A transmitter uses one ADC (Analog to Digital Converter) and transmits audio through Channel 2. Type 1 receiver (Rx) uses one DAC and output audio through Channel 2. The firmware (that is downloaded to EEPROM IC) multiplexes which channel to listen to (in this case Channel 2 since type A is transmitting from channel 2 In) by setting the baseband accordingly.

8.1.2.2. TX-TYPE B / RX-TYPE 2



- Type B transmitter uses two ADC (Analog to Digital Converter) to send audio streams from Channel 1 and Channel 2 for the FX65/FX66 surround sound and FX85 second room audio, respectively. Type 2 receiver outputs audio through Channel 2. The software multiplexes which channel to listen to by setting the baseband accordingly. For example, if the receiver is configured as an FX85 receiver (Type 2), the baseband is configured to accept Channel 1 audio transmission and redirect it to Channel 2 Out. If the receiver is set as an FX65/FX66 or wireless subwoofer, the baseband is configured to accept channel 2 audio transmission and redirect it to the same Channel 2 Out.

8.1.3. Activation

- FX65/FX66 can be activated in the main unit by using either transmitter Type A or Type B and enabling surround sound by selecting Surround Music, DPL or Super Surround (Music/Movie).
- FX85 Wireless feature is enabled by default when the user uses transmitter type B.

8.1.4. LED Indication

- For FX65/FX66, there will be two-color LED that will be used to indicate Power On and Link. If link, the two-color LED will be green, else, it will be red.

For FX85, the front panel will have LED indicators for Standby, Wireless Link, Charge, Option and Music Port. During Power On, Standby LED will be OFF. Only during power OFF will this LED be ON (Red). Wireless Link indicator will be ON (Green) when link is established between TX and RX and OFF when link is lost. Pressing the selector button will toggle from any of the selector modes Wireless, Option and Music port. Only the currently selected mode will be ON (Green), the other two will be OFF. Charge LED will be ON (Red) once iPod charging is initiated.

8.1.5. Key Operation (FX85)

• Selector Button

This button will be used to select Wireless, Option or M.Port and enabling the corresponding LED indicators for each mode. During Power On, by default, selector mode is set to Wireless when power is initially supplied to the system. But during Power On/OFF button, it will remember the last selector mode setting.

• Play Button

This button will send command to the main unit to play CD/DVD as well as the iPod. This function is therefore meaningful only if the second room selector is in Main Source (with the first room user in CD/DVD or iPod) and iPod.

- **Stop Button**

This button will send command to the main unit to stop CD/DVD as well as the iPod. This function is therefore meaningful only if the second room selector is in Main Source (if the first room user is in CD/DVD mode or iPod) and iPod.

- **Forward Skip/Channel Up**

This button depends on the second room source currently selected. It will be interpreted as a Forward Skip by the main unit if the second room source is in Main Source (with the first room user is in CD/DVD or iPod mode) and iPod. It will be interpreted as a Channel Up (preset channels only) if the second room source is in FM, AM, or XM.

- **Reverse Skip/Channel Down**

This button depends on the second room source currently selected. It will be interpreted as a Reverse Skip by the main unit if the second room source is in Main Source (if the first room user is in CD/DVD or mode) and iPod. It will be interpreted as a Channel Down (preset channels only) if the second room source is in FM, AM, or XM.

- **Volume Control**

Volume control will be local to the FX85 module only. Default volume (TBD) will be set every time power is first supplied to the system or during exit from stand by mode.

- **ID-setting Operation**

ID setting operation can be invoked by pressing fast-forward key in the main unit and three [3] key in the remote. Once ID-setting is triggered, the receiver must press its ID-setting button within 60 seconds. During this period, the transmitter will be in open connect mechanism whereby any receiver can pair with the transmitter. After this period elapsed, the transmitter will revert back to using close connect code whereby only those receivers which have the same ID as the transmitter will be able to link. The user also has the option to exit the ID setting operation by pressing the same keys.

- **iPod Detection and Charging**

iPod is detected once inserted on the FX85 and battery charging automatically starts.

– The iPod Charging in Standby Mode:

- Upon iPod insertion detection and FX85 is in Power OFF (stand by), FX85 set will enter iPod charging Standby Mode.
- The FX85's CHARGE LED will light up whenever the iPod is charging.
- FX85 will charge the battery up to five hours. After this period, FX85 will not try to recharge the iPod.
- After battery full condition, even if the iPod is operated such as play, FX85 will not retry to recharge the iPod (timer will start immediately once iPod is inserted).
- Re - charging of the battery in iPod Charging Standby Mode can be done only by removing and reinserting the iPod to the dock.

– The iPod charging in Power On Mode:

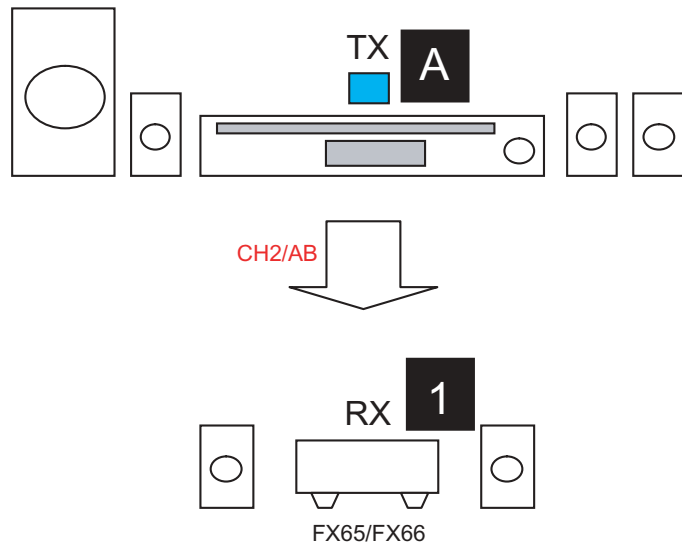
- The iPod automatically charges its battery whenever it is connected during Power ON.
- The FX85's CHARGE LED will light up whenever the iPod is charging.
- FX85 will continue charging the iPod as long as it is inserted (no charging time limit of five hours).

8.1.6. FX Configurations

There are four types of configurations for the FX series. This is explained by the following illustrations below:

Case 1: FX65/FX66

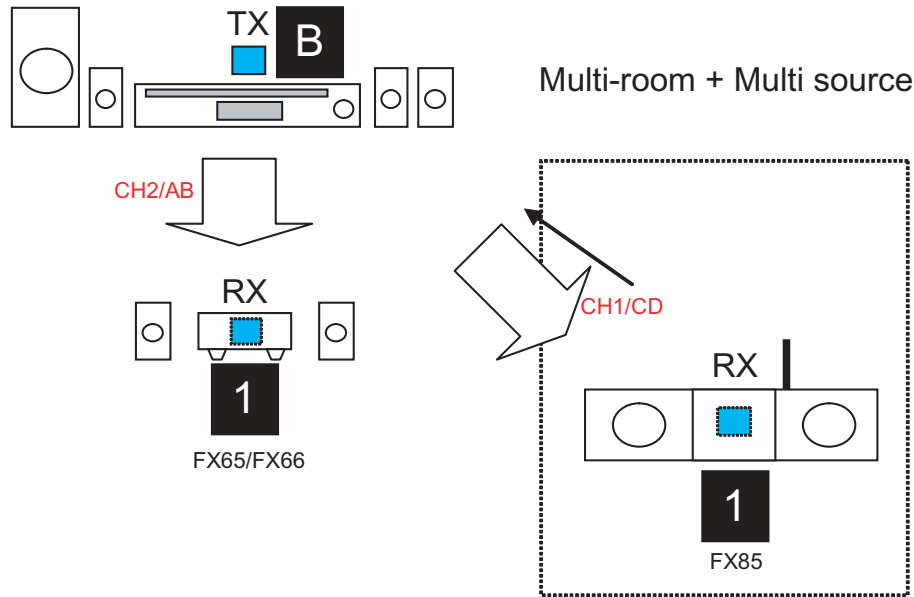
- This is the basic configuration of FX65/FX66 whereby it is only receiving wireless surround audio signal from the main set. This uses a Type A transmitter which is only able to send audio in one direction. Audio is sent using streams AB through Ch 2.



Case 2 A: FX65/FX66 + FX85

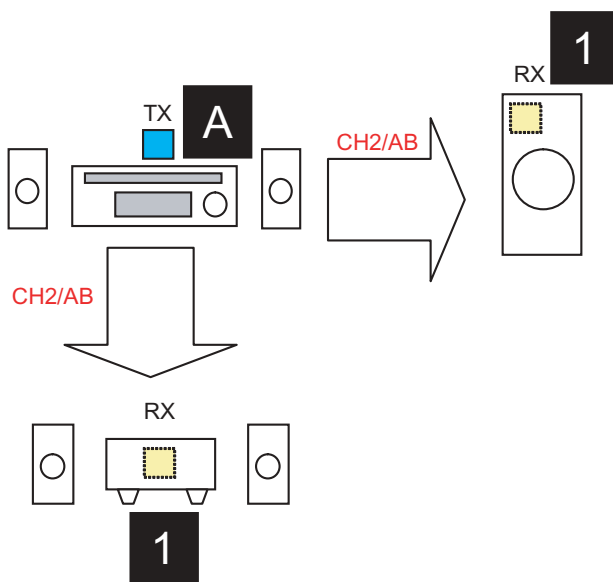
- In this configuration, a second receiver, an FX85, in another room is listening to another audio source from the main set. The FX85 also is able to send command to the main set such as Play, Stop, Skip, and Preset Tuner Channel Up/Down. This configuration uses Type B transmitter which is an upgrade of the Type A and can be used on Type 1 (FX65/FX66). This transmitter is able to send audio signal for second room via Ch 1 and first room via Ch 2.

In this configuration, streams AB is used to transmit the audio from main unit to the first room Type 1 receiver (FX65/FX66) via Ch 2. While the second room audio is transmitted through stream CD via Ch 1.



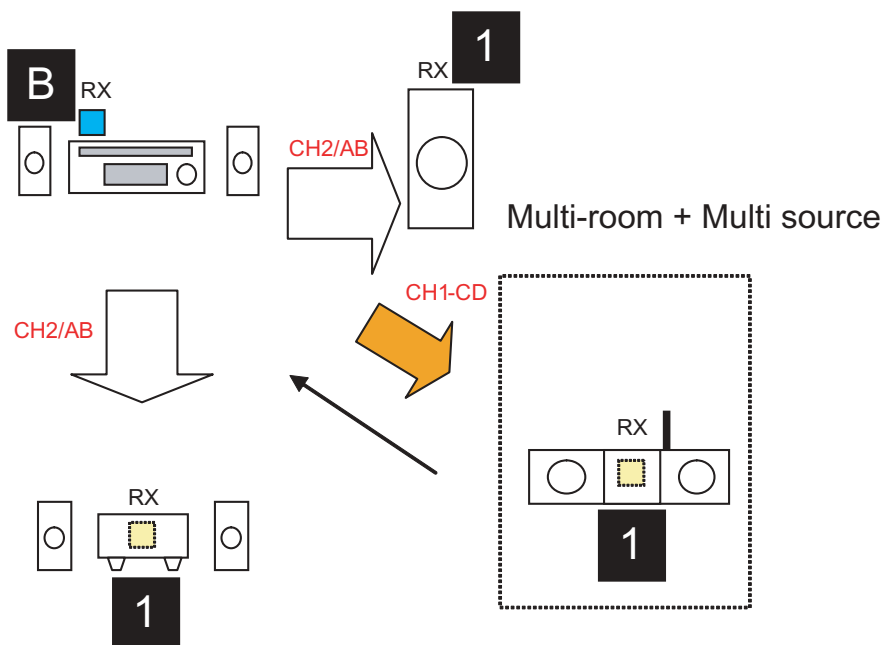
Case 3 A: Wireless Subwoofer

- This configuration, Type A transmitter send signals to subwoofer and Type 1 receiver (FX65/FX66) via channel 2, which is the same audio signals sent to FX65/FX66 as well. The subwoofer only decodes the low frequency signal.

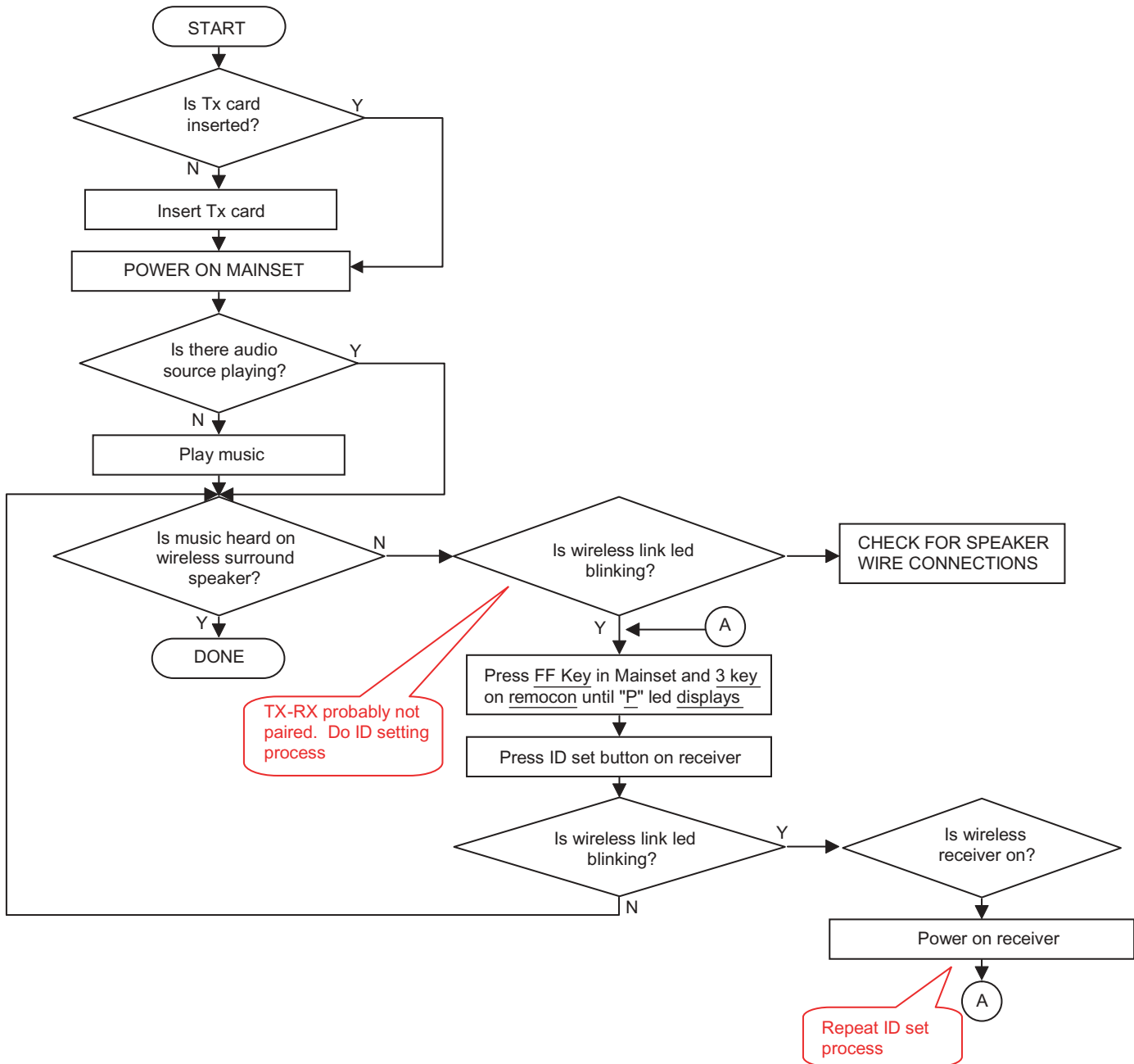


Case 3 B: FX65/FX66 + FX85 + Wireless Subwoofer (for PTX7, PT1050)

- In this configuration, all audio source for the Type 1 subwoofer and Type 1 first room receiver (FX65/FX66) through streams AB via Ch 2 and Type 2 second room receiver (FX85) comes from transmitter B through streams CD via Ch 1. For this configuration, the user must perform ID setting for FX85 if it is sold as an accessory, but for bundled type, it already is paired with the transmitter.



8.1.7. User Operation Flow



8.1.8. Baseband Settings Update from EEPROM IC

- The software will read from an external EEPROM IC to get the selected baseband IC settings. Not all baseband register settings (a total of 512 bytes) will be read from the EEPROM IC, though. Aside from getting the baseband settings from the EEPROM IC, it is also used to enable FCC testing, select the application type and entering into doctor mode (this can be enabled also by sending a command via the main unit).

8.1.9. Doctor Mode

- For normal operation but automatic frequency selection is disabled, it can enter into Doctor Mode. This feature is hidden from normal user and will be used by the service center to fix to a particular RF Channel. With doctor mode, the user can disable frequency automatic allocation and sniffer and be able to select a fix RF Channel (Channels 1, 2 or 3) by a combination or remote control keys.

9 Self-Diagnosis and Special Mode Setting

9.1. Wireless Service Mode Summary Table

The service modes can be activated by pressing various button combination on the player and remote control unit.

Below is the summary of major checking:



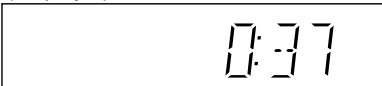
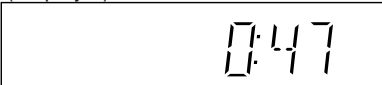
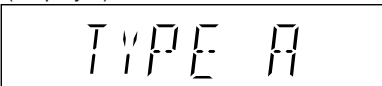
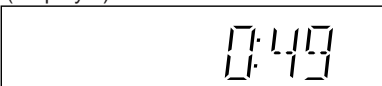
Player buttons	Remote control unit buttons	Application	Note
FAST FORWARD	3	ID setting	(Refer to the section "9.2.1. " for more information).
	SECOND SELECTOR (press & hold)	Active transmitter display	
STOP (only in AUX)	4	RF channel 1 display	(Refer to the section "9.2.2. " for more information).
	5	RF channel 2 display	
	6	RF channel 3 display	
	7	Auto RF channel display	

Note: Main room refers to the location of the main unit.


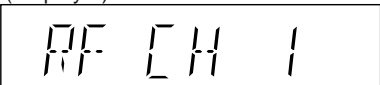
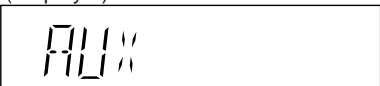

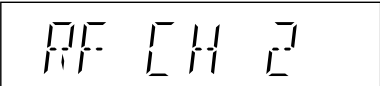
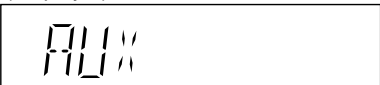

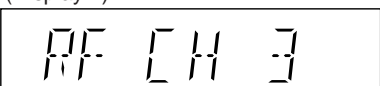




9.2. Service Mode Table (Wireless)

By pressing various button combinations on the player and remote control unit, you can activate the various service modes for checking.

9.2.1. Service Mode Table 1

Item		FL Display	Key Operation
Mode Name	Description		Front Key
ID Setting	<p>To set the ID in the Tx & Rx. The system goes into "Pairing Mode". [P] will be displayed for 60 seconds to indicate it is in "Pairing Mode". During this condition, the "ID set" button on the receiver unit can be pressed to pair the Tx & Rx. After 60 seconds, the FL display will return to its previous display.</p> <p>FL Display sequence: Display 1→2→3.</p> <p>Note: Carry out pairing when Tx or Rx has been changed.</p>	<p>(Display 1)</p>  <p>(Display 2)</p>  <p>(Display 3)</p> 	<p>Main room is in CD/DVD mode.</p> <p>Press and hold [FAST FORWARD] button on the main unit, and [3] button on the remote control unit.</p> <p>After 10 seconds. To cancel, press the same buttons.</p>
Active Transmitter Type Display	<p>To check the type of transmitter inserted into the main unit. There are two types of transmitter card. (Type A & Type B).</p> <p>Type A: FX65/FX66/Wireless Active Woofer</p> <p>Type B: FX85 (For multiroom features)</p> <p>In normal condition, with transmitter operating properly and slotted in the main unit, it shows on FL Display in Condition 1.</p> <p>FL Display sequence: Display 1→2→3.</p>	<p>(Condition 1 - Transmitter is Type A)</p> <p>(Display 1)</p>  <p>(Display 2)</p>  <p>(Display 3)</p> 	<p>Main room is in CD/DVD mode.</p> <p>Press and hold [SECOND SELECTOR] button on the remote control unit.</p> <p>After 2 seconds.</p>

9.2.2. Service Mode Table 2

Item		FL Display	Key Operation
Mode Name	Description		Front Key
RF Channel Selection Display	RF Channel 1 Display*	(Display 1)  (Display 2)  (Display 3) 	Main room is in AUX mode. Press and hold [STOP] button on the main unit, and [4] button on the remote control unit. After 2 seconds.
	RF Channel 2 Display*	(Display 1)  (Display 2)  (Display 3) 	Main room is in AUX mode. Press and hold [STOP] button on the main unit, and [5] button on the remote control unit. After 2 seconds.
	RF Channel 3 Display*	(Display 1)  (Display 2)  (Display 3) 	Main room is in AUX mode. Press and hold [STOP] button on the main unit, and [6] button on the remote control unit. After 2 seconds.
	Auto RF Channel Display*	(Display 1)  (Display 2)  (Display 3) 	Main room is in AUX mode. Press and hold [STOP] button on the main unit, and [7] button on the remote control unit. After 2 seconds.

*Note: This mode is for purpose of disabling/enabling the frequency of automatic allocation and be able to select a fixed RF channel (channels 1, 2 or 3).

10 Assembling and Disassembling

10.1. Caution

“ATTENTION SERVICER”

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.

Below is the list of disassembly sections

- Disassembly of Top Panel
- Disassembly of Led and Led Drive P.C.B
- Disassembly of SMPS Module Unit
- Disassembly of DAMP P.C.B
- Disassembly of Digital Amp IC
- Disassembly of Receiver Module P.C.B
- Disassembly of Transmitter Module P.C.B (SH-FX65T)

CAUTION NOTE:

Please use original screws and at correct locations.

Below shown is the part no. of different screw types used:

- | | |
|-----------------------|-----------------------|
| a : XTB3+10JFJ | c : RHD30111-3 |
| b : RHD26046 | d : XTB2+6GFJK |

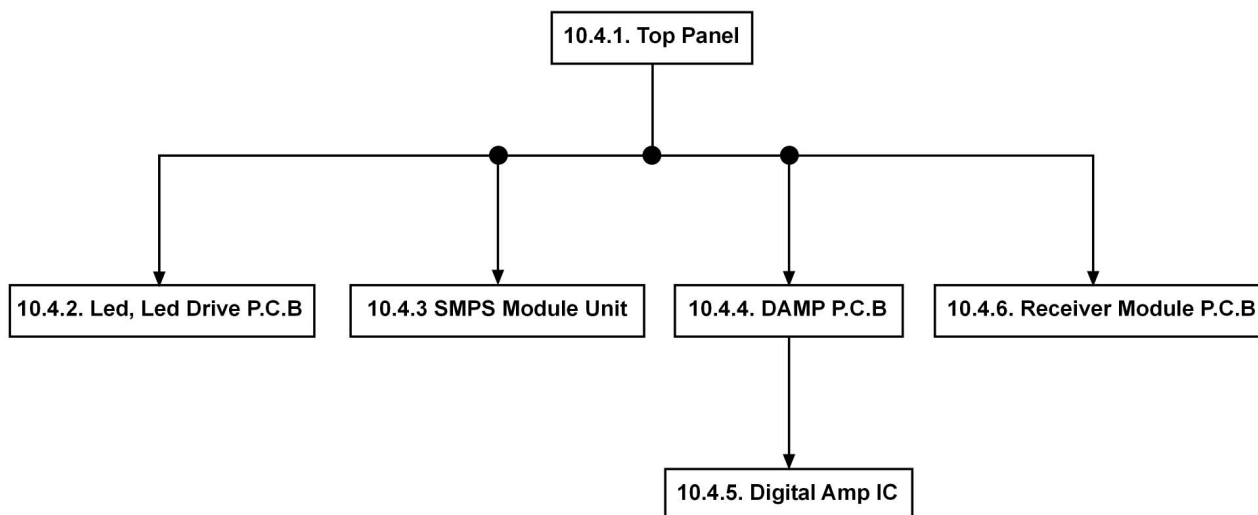
10.1.1. SMPS Module Unit Replacement

1. This model uses SMPS Module unit to provide the necessary supply voltages for the receiver unit (SE-FX65).
2. It is advisable to replace the SMPS Module Unit if upon detecting of non-working conditions. Do not attempt to repair or replace its components on board.

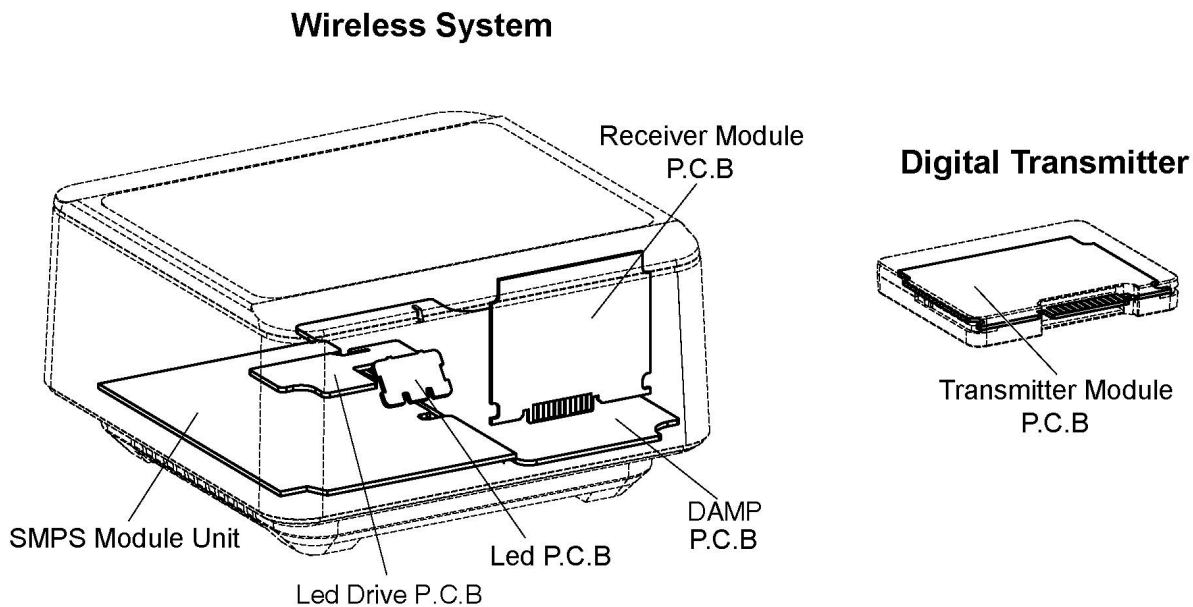
10.2. Disassembly flow chart (For SE-FX65)

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing. For the digital receiver unit only.

To assemble the unit, reverse the steps shown in the chart below.

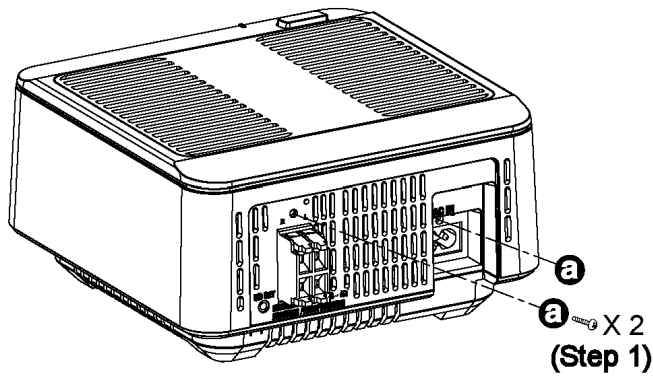


10.3. Main Parts Location Diagram

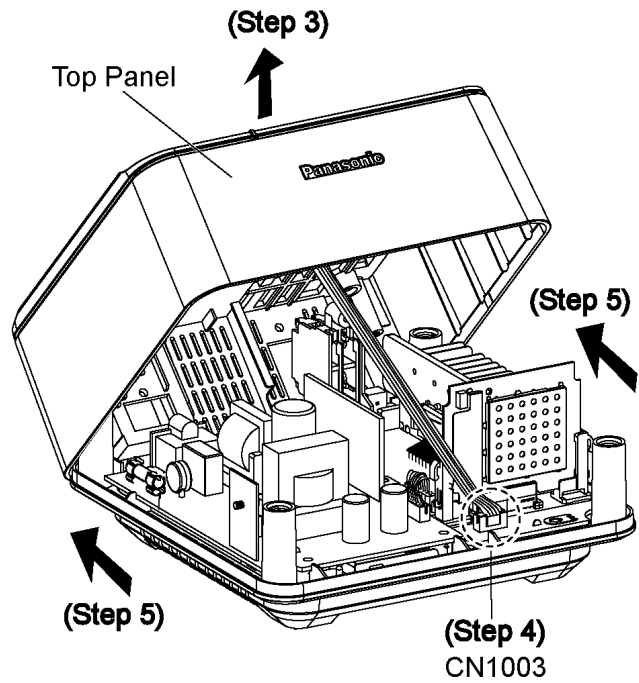


10.4. Disassembly of Wireless System (SE-FX65GC/GT)

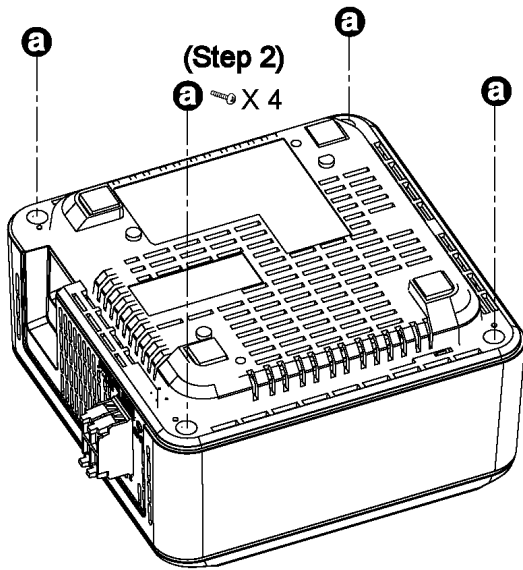
10.4.1. Disassembly of Top Panel



Step 1 : Remove 2 screws.



Step 3 : Lift up the top panel.
Step 4 : Detach connector (CN1003).
Step 5 : Push back slightly before lifting the top panel from the unit.

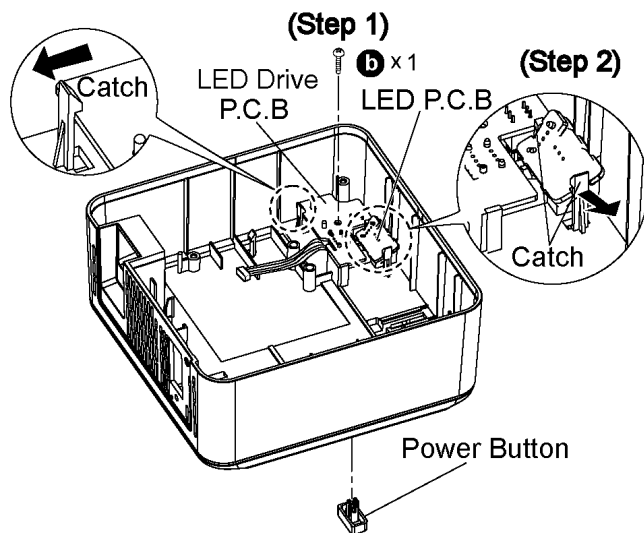


Step 2 : Remove 4 screws.

10.4.2. Disassembly of Led P.C.B and Led Drive P.C.B

NOTE: SMPS Module Unit is replaceable as a whole complete unit.

- Follow the (Step 1) - (Step 5) of item 10.4.1.



Step 1 : Remove 1 screw.

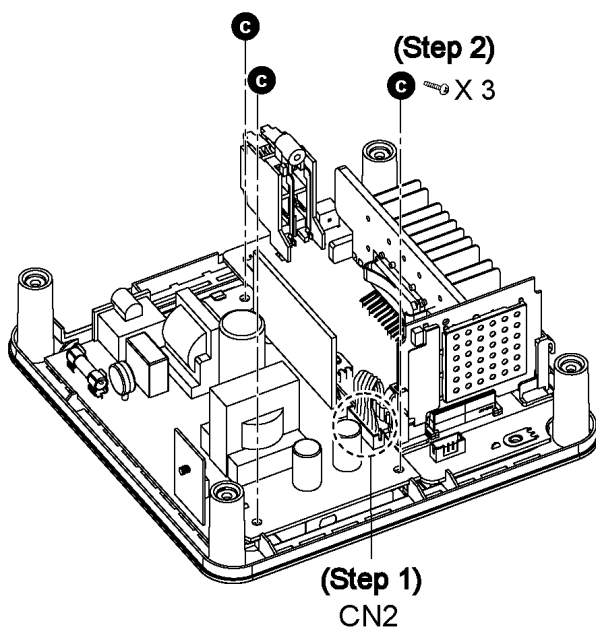
Step 2 : Release the catches.

Caution : Don't apply too much force in releasing the catches as this might result in breaking the catches. Power Button will be released after removing P.C.B.

10.4.3. Disassembly of SMPS Module Unit

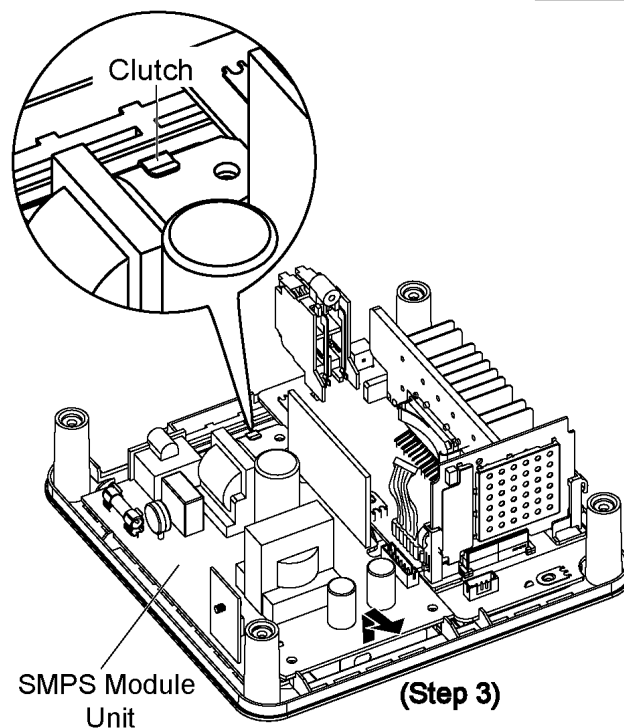
Note: SMPS Module Unit is replaceable as a whole complete unit.

- Follow the (Step 1) - (Step 5) of item 10.4.1.



Step 1 : Detach connector (CN2).

Step 2 : Remove 3 screws.

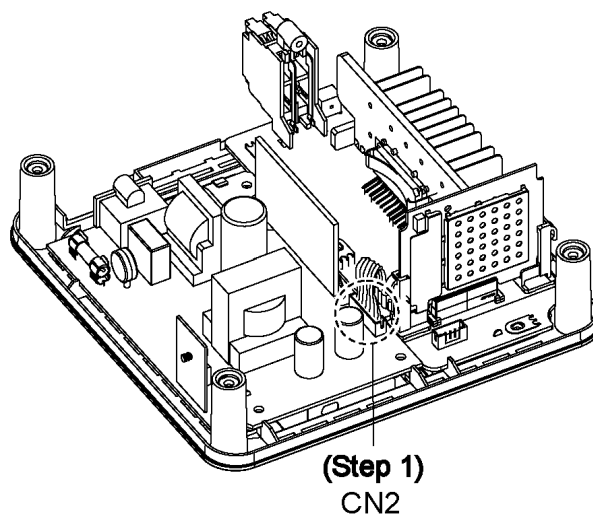


Step 3 : Remove SMPS Module Unit as arrow shown.

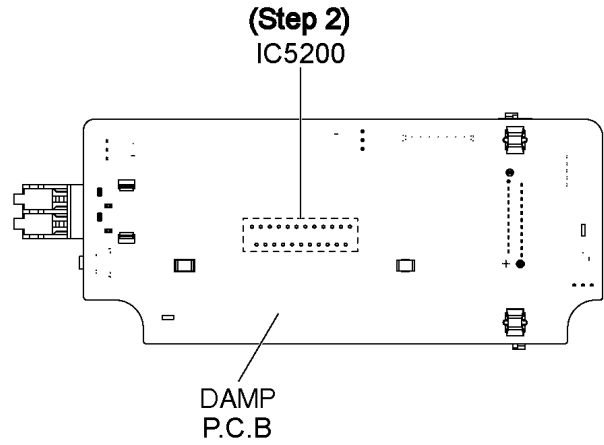
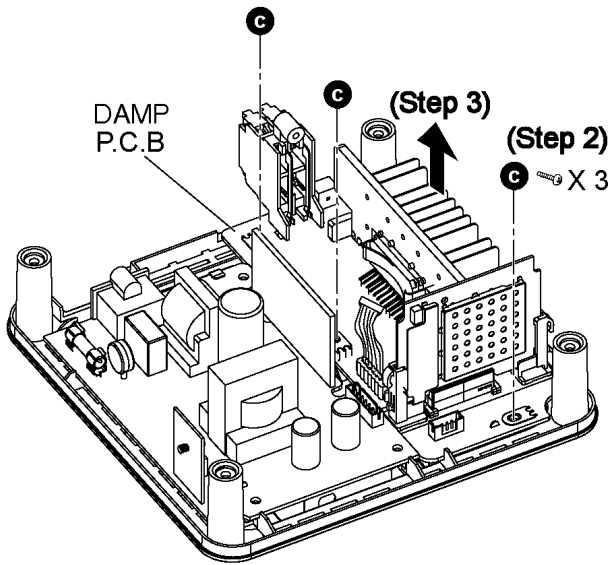
Caution : Ensure SMPS module unit is under the clutch when assembling back the unit.

10.4.4. Disassembly of DAMP P.C.B

- Follow the (Step 1) - (Step 5) of item 10.4.1.



Step 1 : Detach connector (CN2).



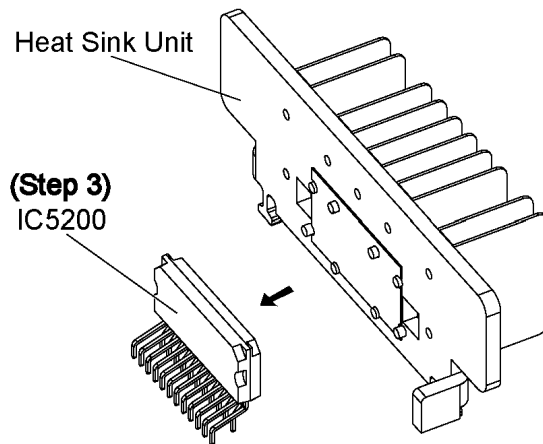
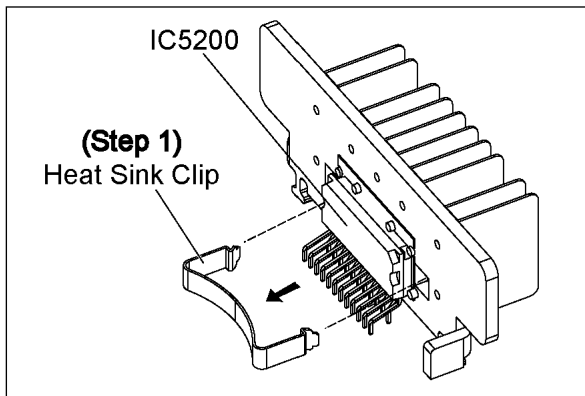
Step 2 : De-solder to remove IC5200.

Step 2 : Remove 3 screws.

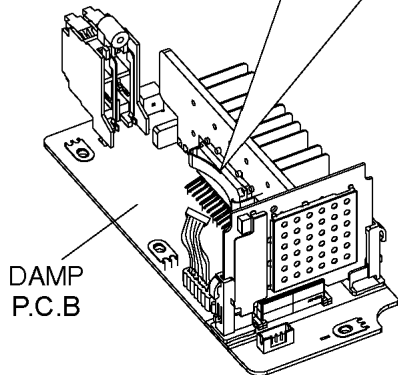
Step 3 : Remove DAMP P.C.B as arrow shown.

10.4.5. Replacement of Digital Amp IC

- Follow the (Step 1) - (Step 5) of item 10.4.1.
- Follow the (Step 1) - (Step 3) of item 10.4.4.



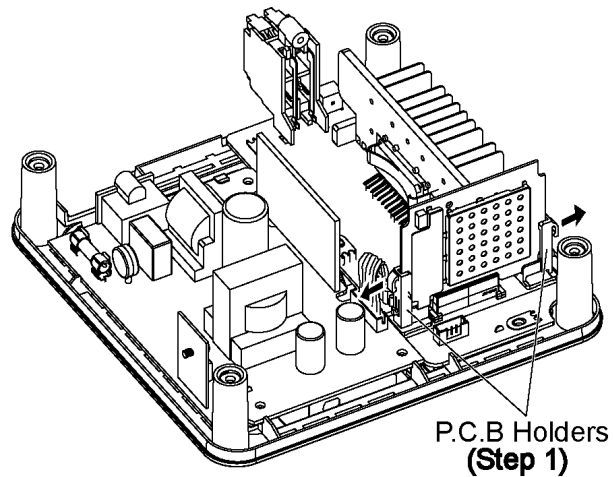
Step 3 : Remove IC5200 as arrow shown.



Step 1 : Remove heat sink clip as arrow shown.

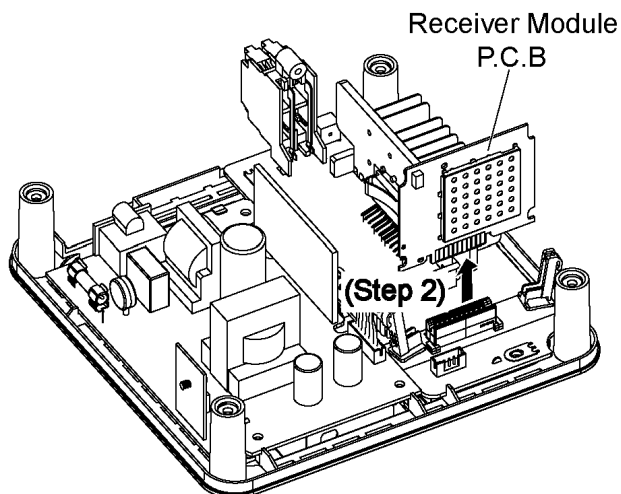
10.4.6. Disassembly of Receiver Module P.C.B

- Follow the (Step 1) - (Step 5) of item 10.4.1.



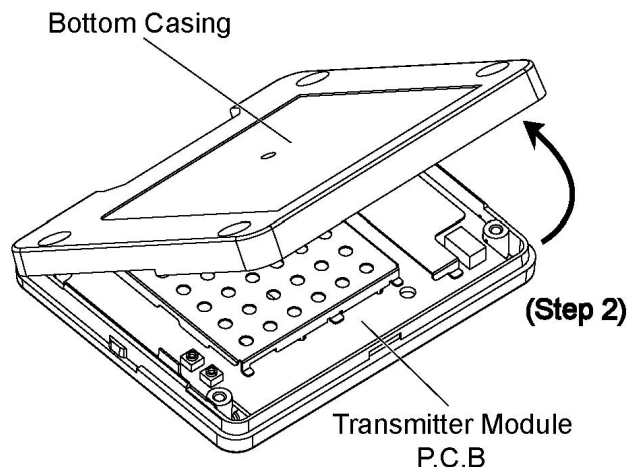
Step 1 : Push the sides of both P.C.B holders.

Step 1 : Remove 4 screws.

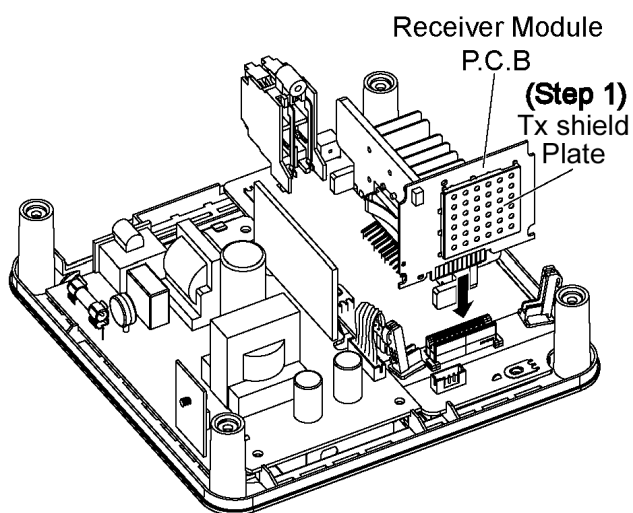


Step 2 : Remove Receiver Module P.C.B as arrow shown.

• Assembly of Receiver Module P.C.B



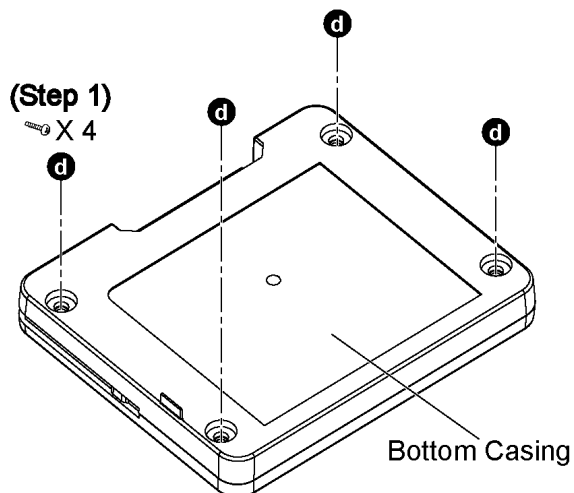
Step 2 : Remove bottom casing as arrow shown.



Step 1 : Insert the Receiver Module P.C.B until it is completely secured.

Caution : Ensure the Tx shield plate is facing outwards when placing back the Receiver Module P.C.B.

10.5. Disassembly of Transmitter Module P.C.B (SH-FX65T)



11 Service Positions

Note: For description of the disassembly procedures, see the Section 10.

11.1. Checking of Led, Led Drive, DAMP and Receiver Module P.C.B.

1. Disassemble Top Cabinet

- Remove 2 screws on rear panel
- Remove 4 screws on bottom panel
- Lift up top cabinet
- Detach connector (CN1003)

2. Disassemble DAMP P.C.B

- Remove 3 screws
- Flip over DAMP P.C.B

3. Connector Led, Led Drive P.C.B

- Connector 5P cable between H4000 to CN1003

Receiver Module P.C.B

Led Drive P.C.B

DAMP P.C.B

Led P.C.B

12 Voltage Measurement & Waveform Chart

Note:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point because it may differ from actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

12.1. Voltage Measurement

12.1.1. DAMP P.C.B

DAMP P.C.B																				
Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0	0	0	-15.5	0	0	0	16												
STANDBY	-0.1	-0.1	-0.1	-0.4	0	0.1	0.1	-0.4												
Ref No.	IC3002																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0	0	0	-15.5	0	0	0	16												
STANDBY	-0.1	-0.1	-0.1	-0.4	0	0.1	0.1	-0.4												
Ref No.	IC5200																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	-26	0	0	29.4	0	-29	-21	29.7	11.1	-0.2	-30	-18	-30	-0.2	10.8	29.7	-29	-29	0	29.4
STANDBY	-29	0	0	29.8	0	-27	-29	29.8	0	0	-30	-29	-25	0	0	29.6	-29	-30	0	29.8
Ref No.	IC5200																			
MODE	21	22	23																	
CD PLAY	0	0	2.5																	
STANDBY	0	0	0																	
Ref No.	Q1003			Q1004			Q1005			Q1006			Q1007							
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
CD PLAY	29	29	28.4	4.9	5	4.2	0	0	3.2	0	0	2.4	0	0	2.4	0	3.3	0		
STANDBY	29.8	0	28.7	5	0.1	6.9	0	7.2	0	0	0	2.4	0	0	2.4	0	3.3	0		
Ref No.	Q1008			Q1009			Q1010			Q1011			Q2002							
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
CD PLAY	0	3.3	0	0	0	3.2	29	29	0	-29	-29	-29	16.3	28.8	16.8					
STANDBY	0	3.3	0	0	28.6	0	0	-29	0	-30	-0.7	-29	-0.3	0	0					
Ref No.	Q2010			Q2011																
MODE	E	C	B	E	C	B														
CD PLAY	0	-16	-0.6	-16	-29	-16														
STANDBY	0	-0.6	-0.3	-0.3	-0.7	-0.7														

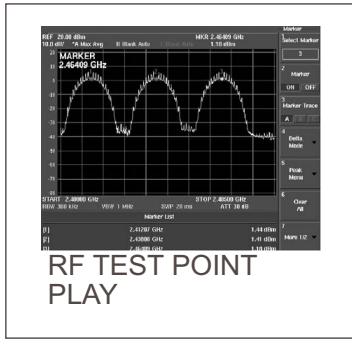
SE-FX65GC/GT DAMP P.C.B

12.1.2. LED P.C.B

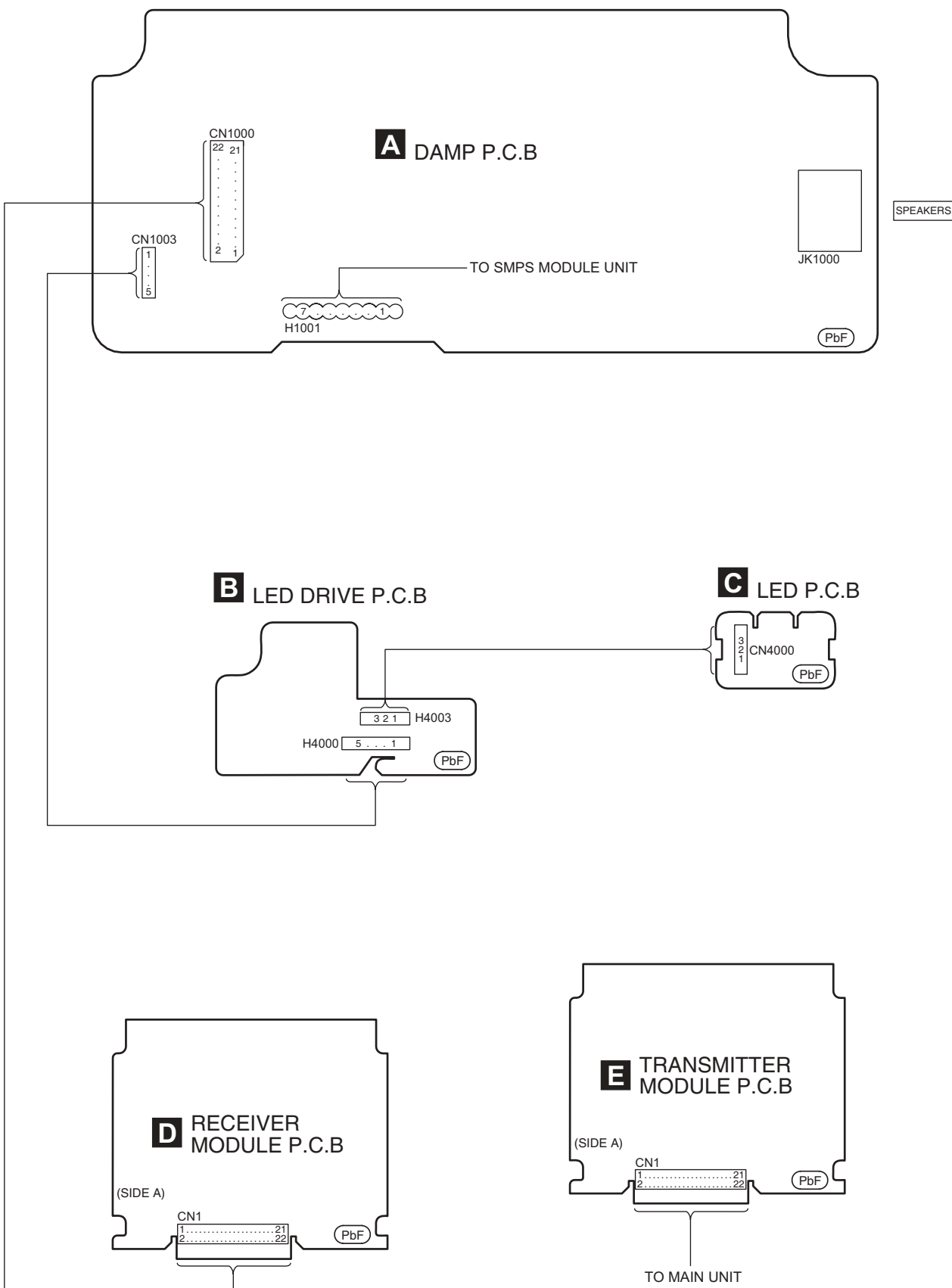
LED P.C.B												
Ref No.	Q4000			Q4001								
MODE	E	C	B	E	C	B						
CD PLAY	0	-0.3	3.3	2.2	0	0.2						
STANDBY	0	5	0	5	-7	5						

SE-FX65GC/GT LED P.C.B

12.2. Waveform Chart

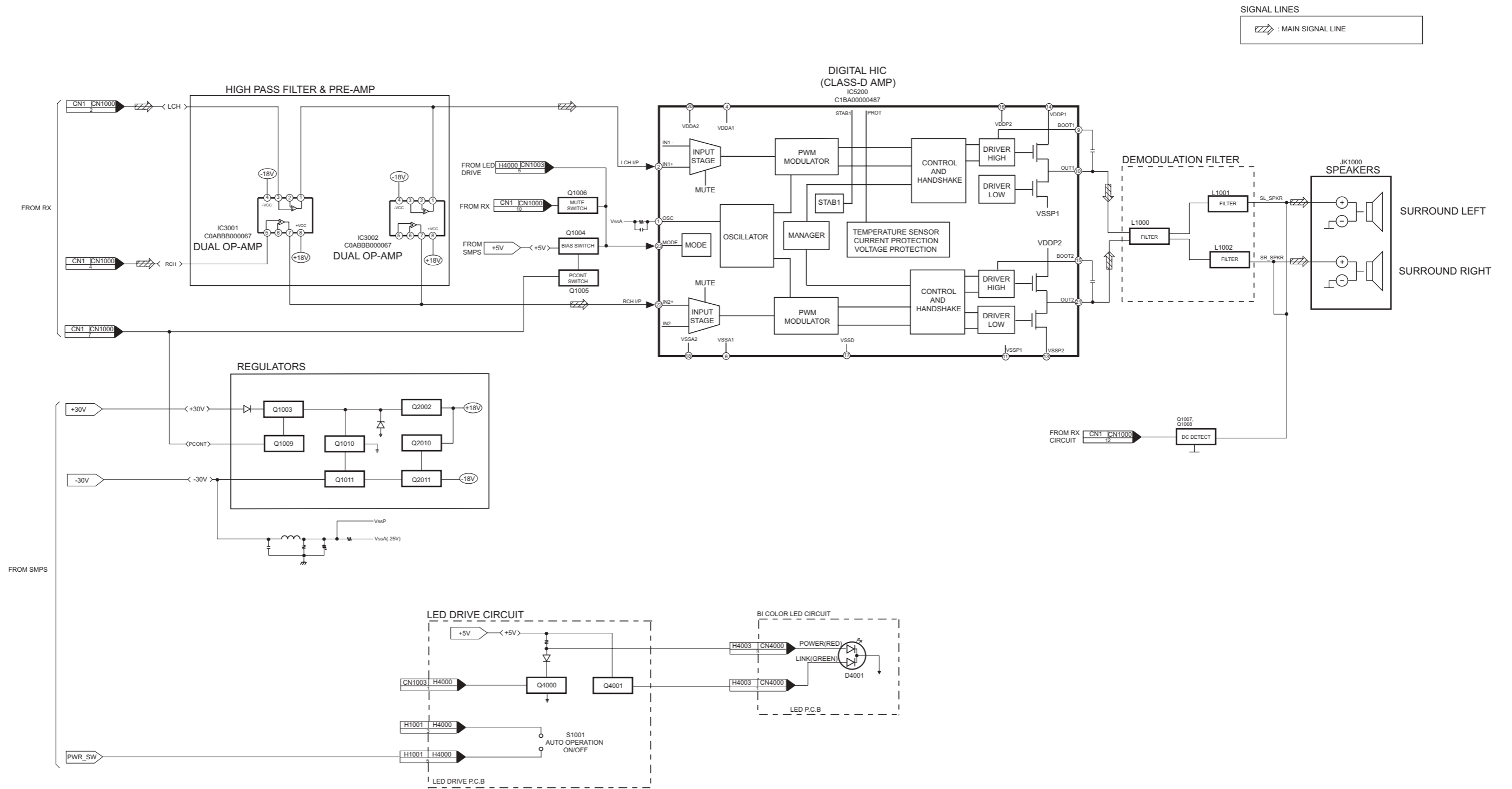


13 Wiring Connection Diagram



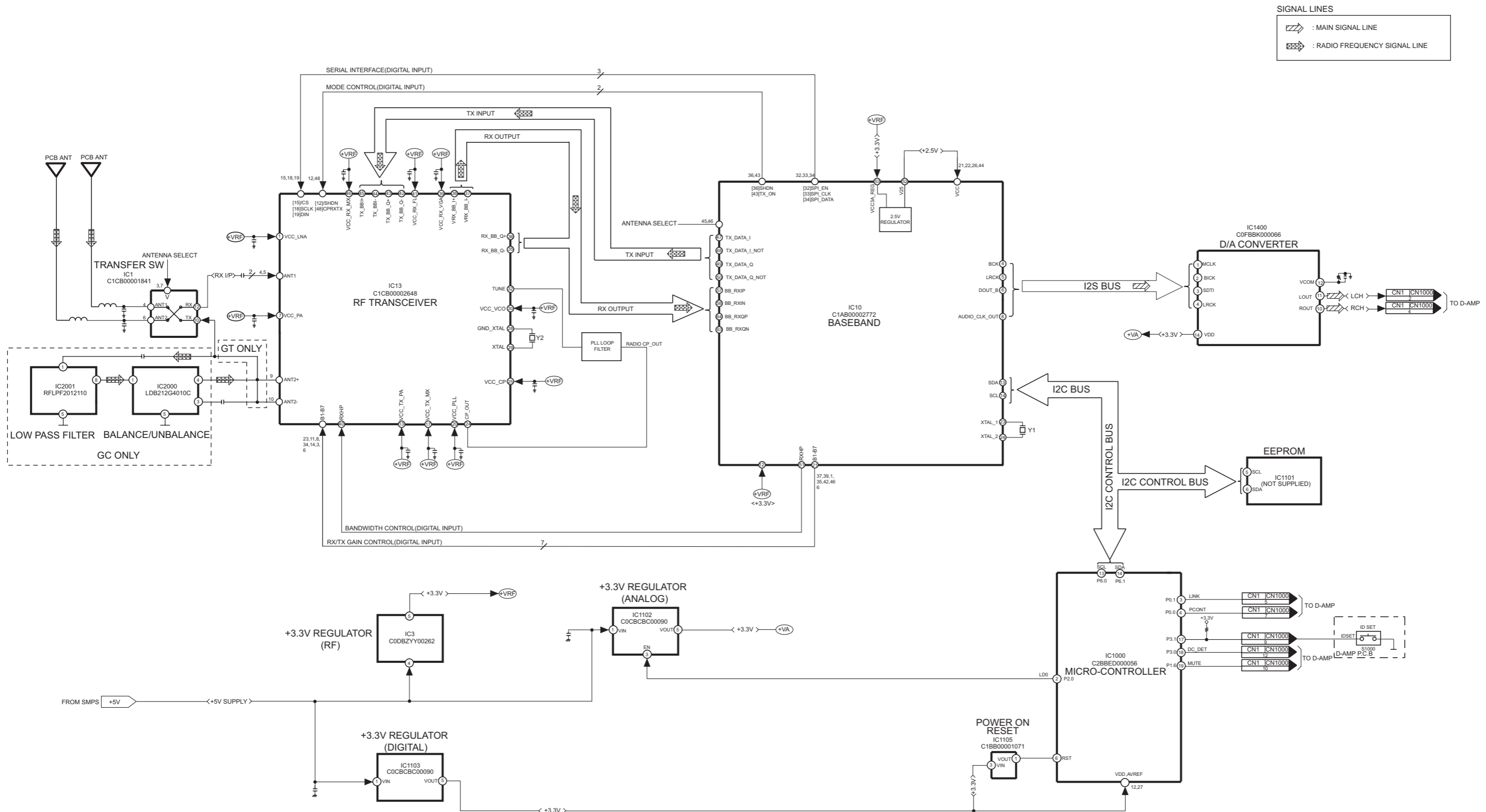
14 Block Diagram

14.1. DIGITAL AMPLIFIER/LED DRIVE/LED BLOCK DIAGRAM



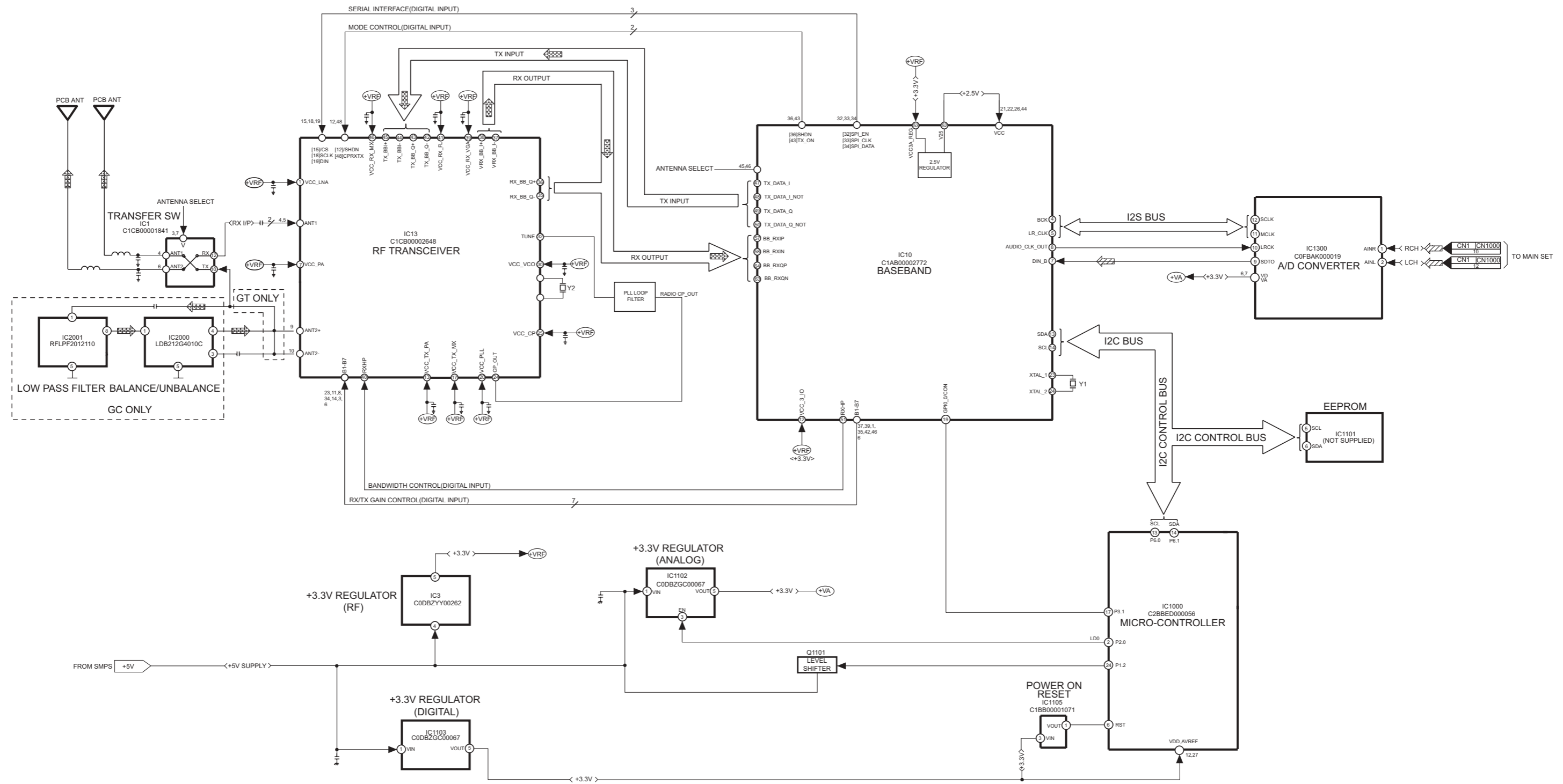
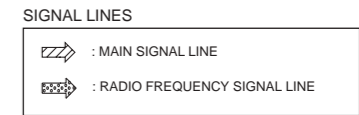
SH-FX65GC/GT (SE-FX65GC/GT) DIGITAL AMPLIFIER/LED DRIVE/LED BLOCK DIAGRAM

14.2. RECEIVER MODULE BLOCK DIAGRAM



SH-FX65GC/GT (SE-FX65GC/GT) RECEIVER MODULE BLOCK DIAGRAM

14.3. TRANSMITTER MODULE BLOCK DIAGRAM



SH-FX65GC/GT (SH-FX65TGC/GT) TRANSMITTER MODULE BLOCK DIAGRAM

15 Notes of Schematic Diagram

(All schematic diagrams may be modified at any time with the development of new technology)

Notes:

- S1000: ID SET switch.
S1001: POWER switch.

• Importance safety notice :

Components identified by \triangle mark have special characteristics important for safety.





Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- Capacitor values are in microfarad(μF) unless specified otherwise, F=Farad, pF=Pico-Farad

Resistance values are in ohm(Ω), unless specified otherwise, 1K=1,000 Ω , 1M=1,000K Ω

• Voltage and Signal lines:

	: +B Signal line
	: -B Signal line
	: Main signal line
	: RF signal line

Special Note :

- This model uses Switching Mode Power Supply (SMPS) for providing necessary voltages.
- There is no schematic drawings included in this document for the SMPS Module.
- It is advisable to replace the SMPS module as an assembly unit.

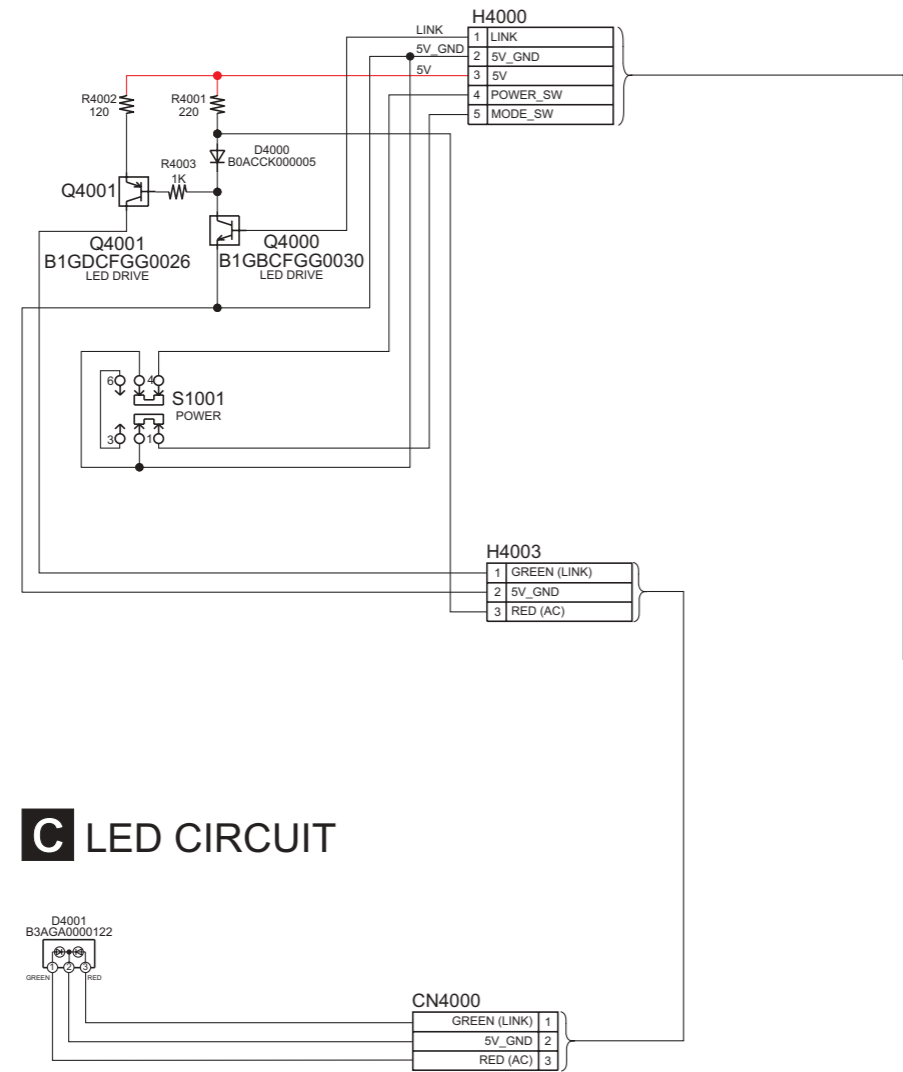
16 Schematic Diagram

16.1. DAMP CIRCUIT, LED DRIVE CIRCUIT and LED CIRCUIT

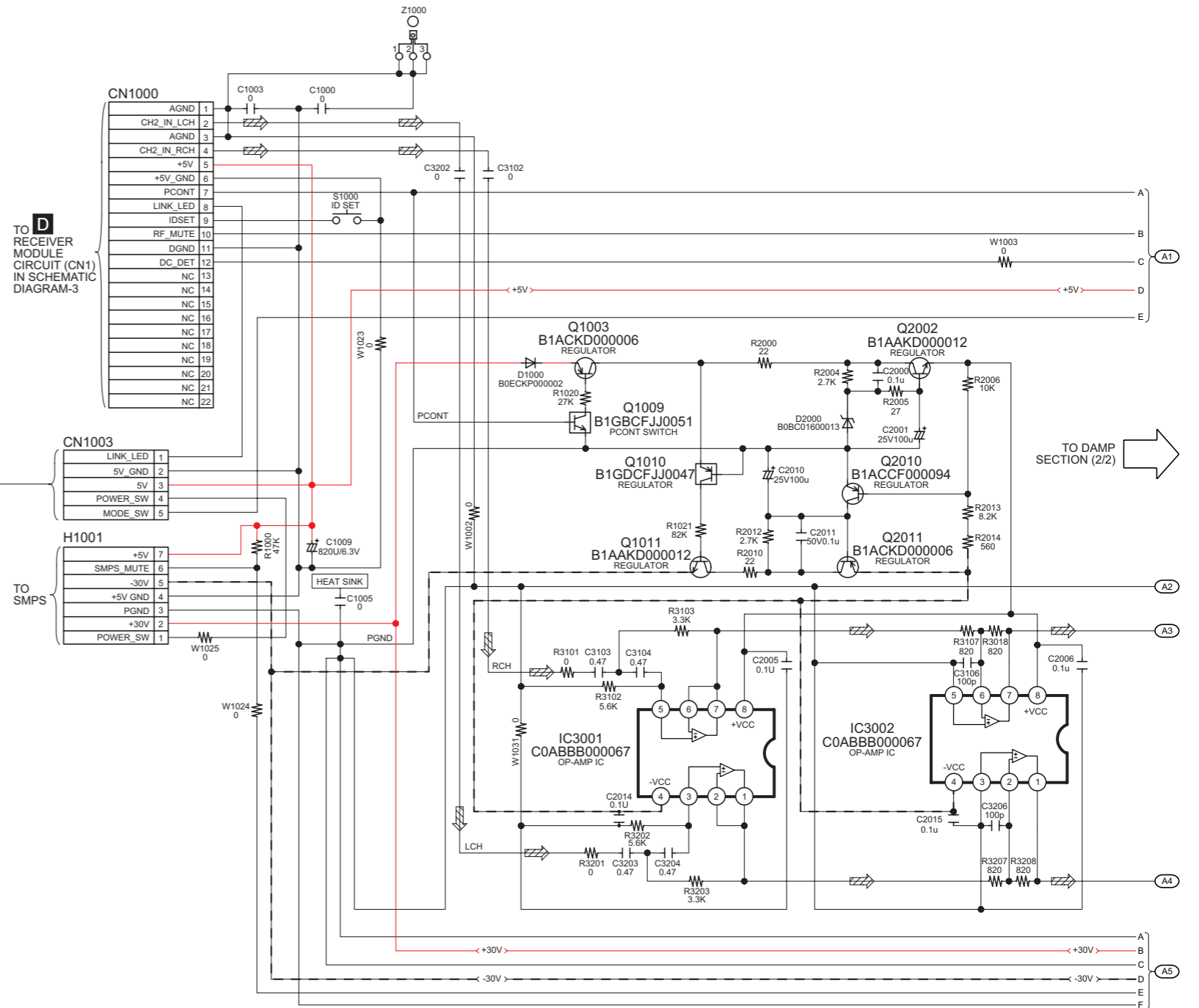
SCHEMATIC DIAGRAM - 1

B LED DRIVE CIRCUIT

— + B SIGNAL LINE
 - - B SIGNAL LINE MAIN SIGNAL LINE



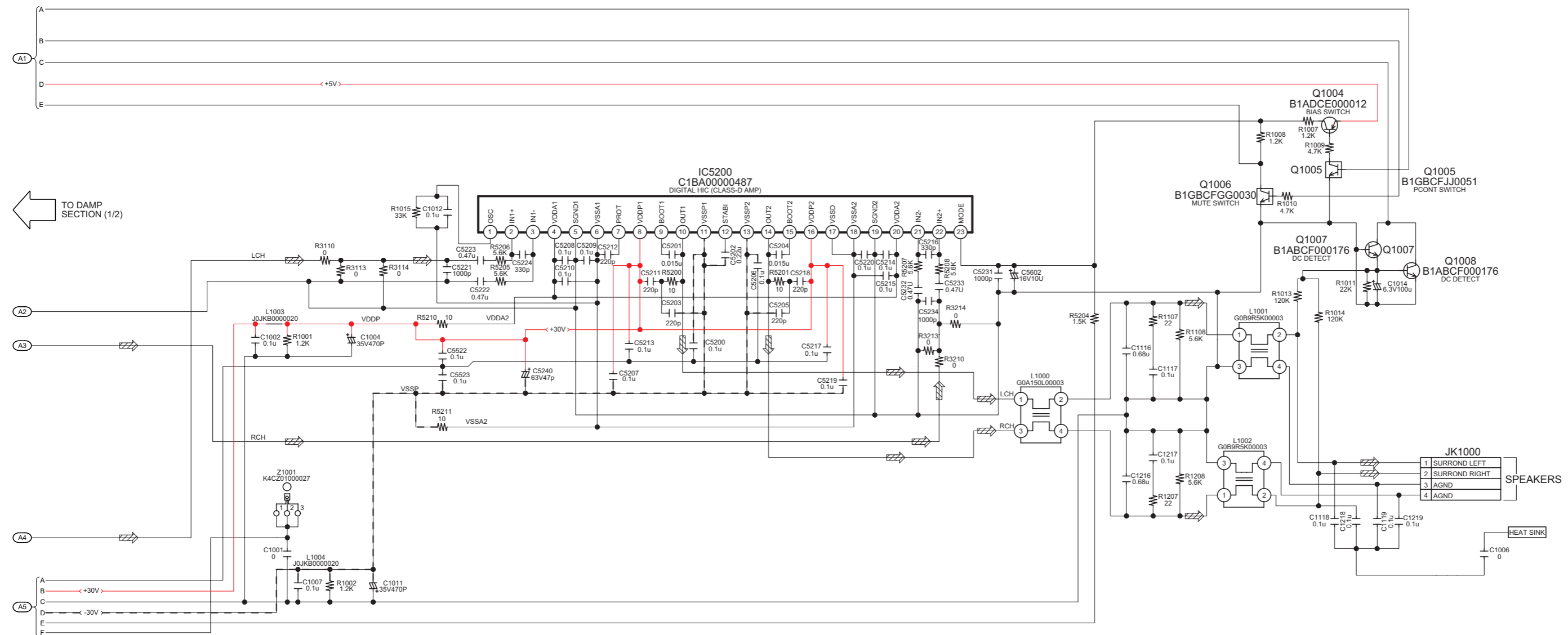
A DAMP CIRCUIT



SCHEMATIC DIAGRAM - 2

A DAMP CIRCUIT

— : + B SIGNAL LINE - - - : + B SIGNAL LINE : MAIN SIGNAL LINE





TO DAMP SECTION (1/2)

16.2. RECEIVER MODULE CIRCUIT

SCHEMATIC DIAGRAM - 3

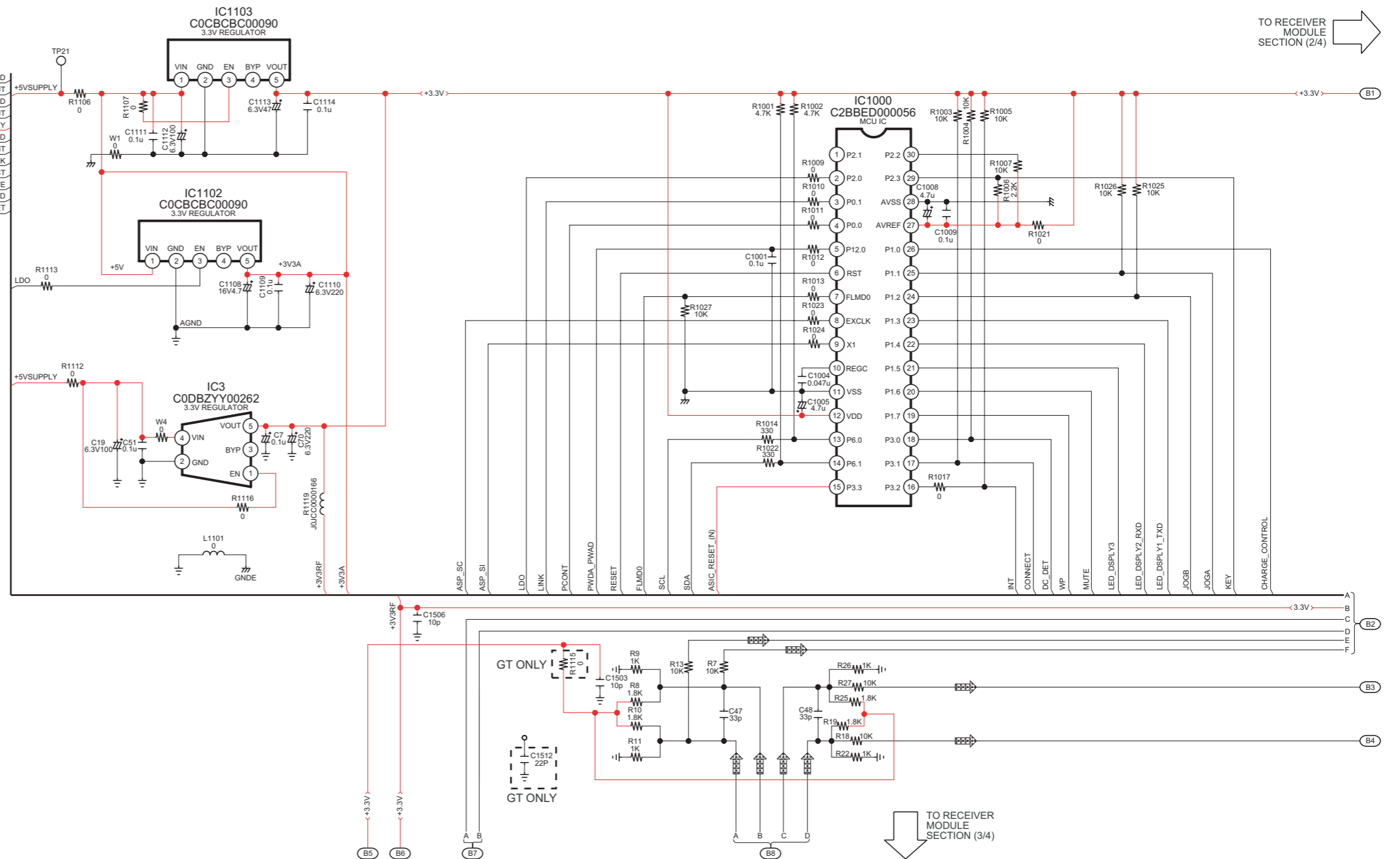
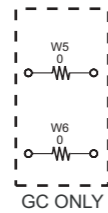
D RECEIVER MODULE CIRCUIT (FOR REFERENCE ONLY)

— : + B SIGNAL LINE  : MAIN SIGNAL LINE  : RF SIGNAL LINE

CN1
(PATTERN CONNECTOR)

AGND	1	AGND
CH2_L_OUT	2	CH2_L_OUT
AGND	3	AGND
CH2_R_OUT	4	CH2_R_OUT
+5V	5	+5VSUPPLY
+5V_GND	6	GND
PCONT	7	PCONT
LINK	8	LINK
IDSET	9	CONNECT
MUTE	10	MUTE
DGND	11	GND
DC_DET	12	DC_DET
NC	13	
NC	14	
NC	15	
NC	16	
NC	17	
NC	18	
NC	19	
NC	20	
NC	21	
NC	22	

TO **A**
DAMP CIRCUIT
(CN1000) IN
SCHEMATIC
DIAGRAM-1



TO RECEIVER
MODULE
SECTION (2/4) 

TO RECEIVER
MODULE
SECTION (3/4) 

 STATIC SENSITIVE PART



1/4	2/4
3/4	4/4

SH-FX65GC/GT (SE-FX65GC/GT) RECEIVER MODULE CIRCUIT

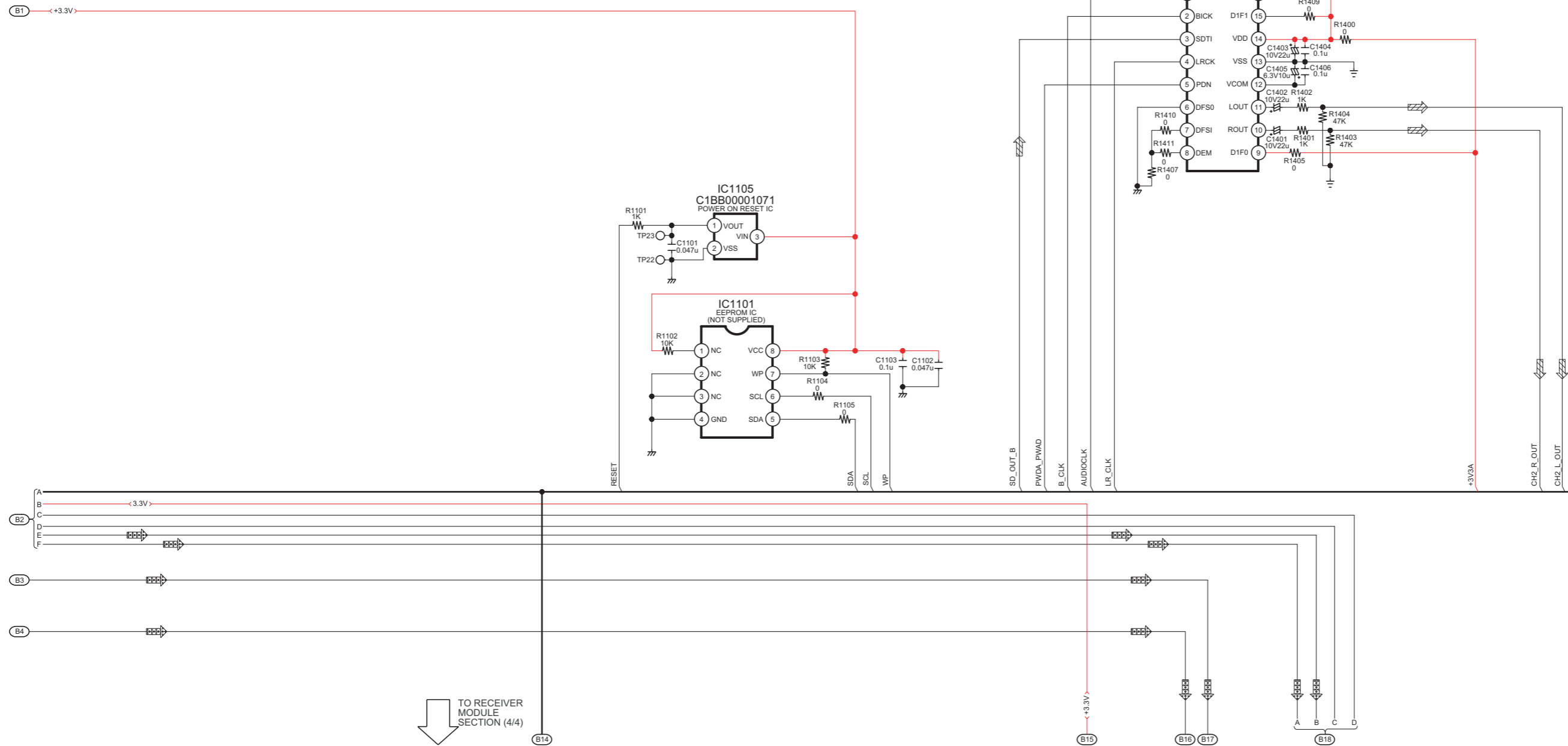
15 16 17 18 19 20 21 22 23 24 25 26 27 28

SCHEMATIC DIAGRAM - 4

D RECEIVER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— : +B SIGNAL LINE  : MAIN SIGNAL LINE  : RF SIGNAL LINE

← TO RECEIVER MODULE SECTION (1/4)



A
B
C
D
E
F

B2
B3
B4

↓ TO RECEIVER MODULE SECTION (4/4)

B14

B15


B16

B17

B18

1/4	2/4
3/4	4/4

SH-FX65GC/GT (SE-FX65GC/GT) RECEIVER MODULE CIRCUIT

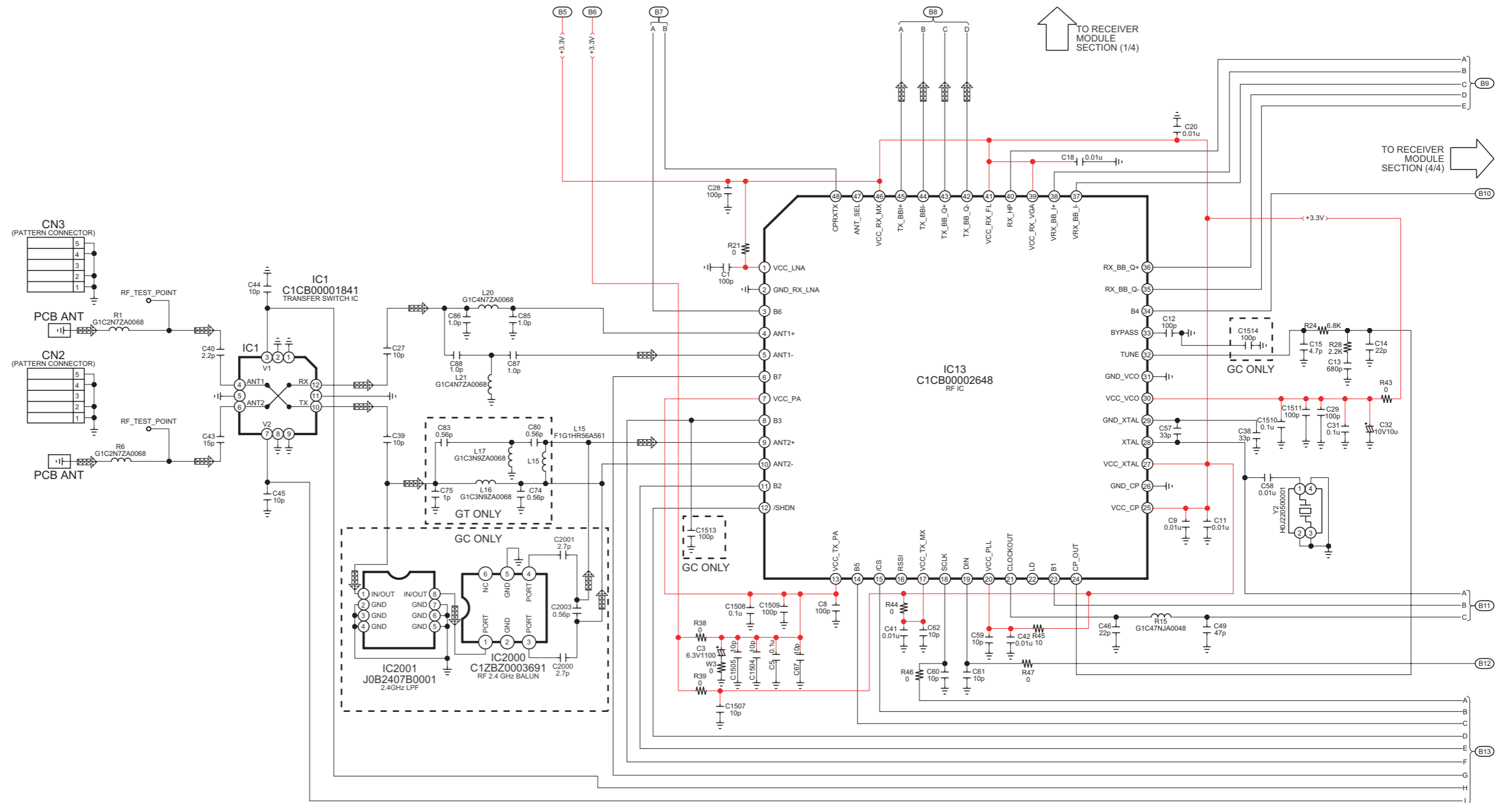
 STATIC SENSITIVE PART

A
B
C
D
E
F
G
H

SCHEMATIC DIAGRAM - 5

D RECEIVER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— + B SIGNAL LINE MAIN SIGNAL LINE RF SIGNAL LINE



STATIC SENSITIVE PART

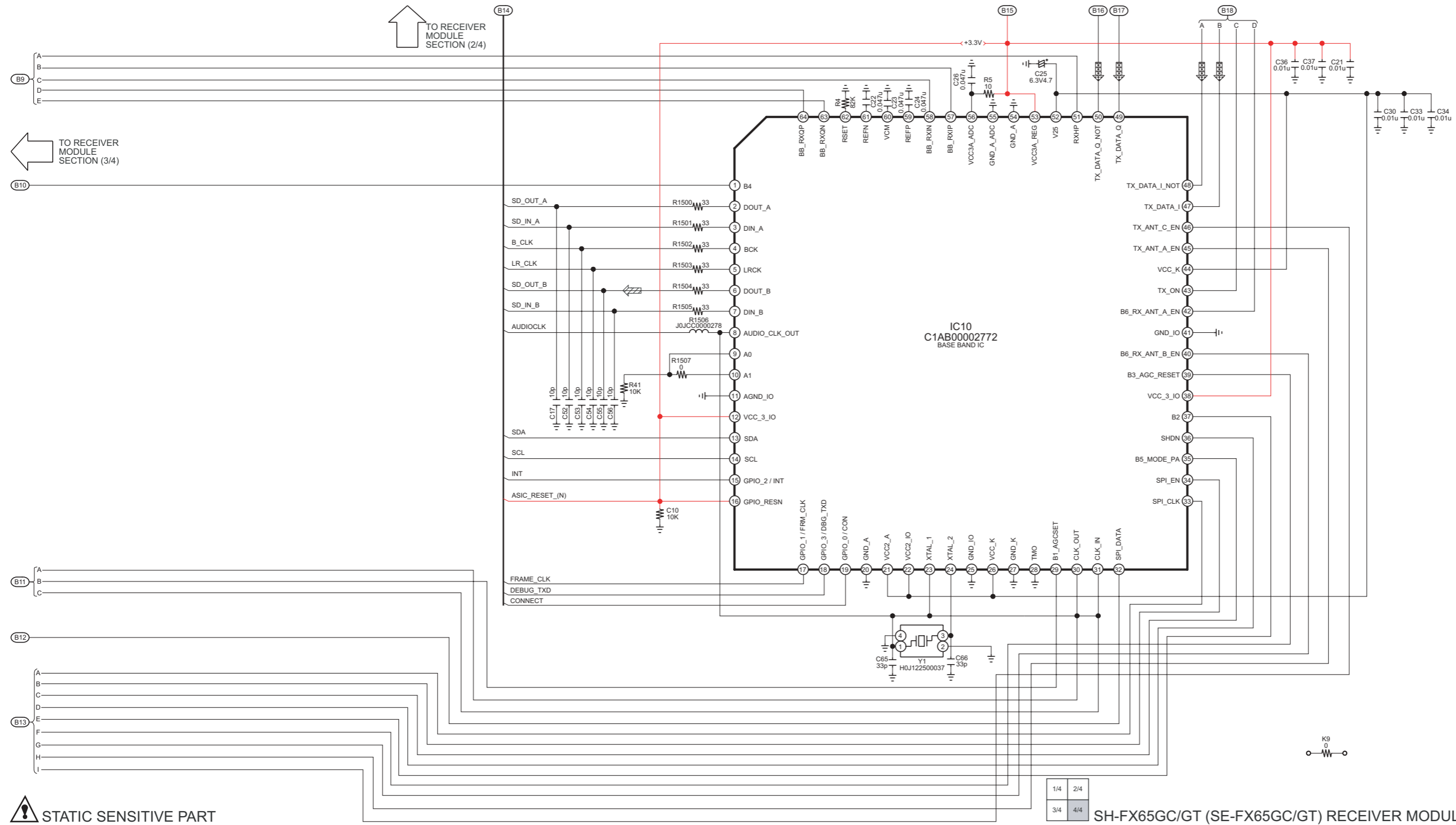
1/4	2/4
3/4	4/4

SH-FX65GC/GT (SE-FX65GC/GT) RECEIVER MODULE CIRCUIT

SCHEMATIC DIAGRAM - 6

D RECEIVER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— : + B SIGNAL LINE  : MAIN SIGNAL LINE  : RF SIGNAL LINE



1/4	2/4
3/4	4/4

SH-FX65GC/GT (SE-FX65GC/GT) RECEIVER MODULE CIRCUIT

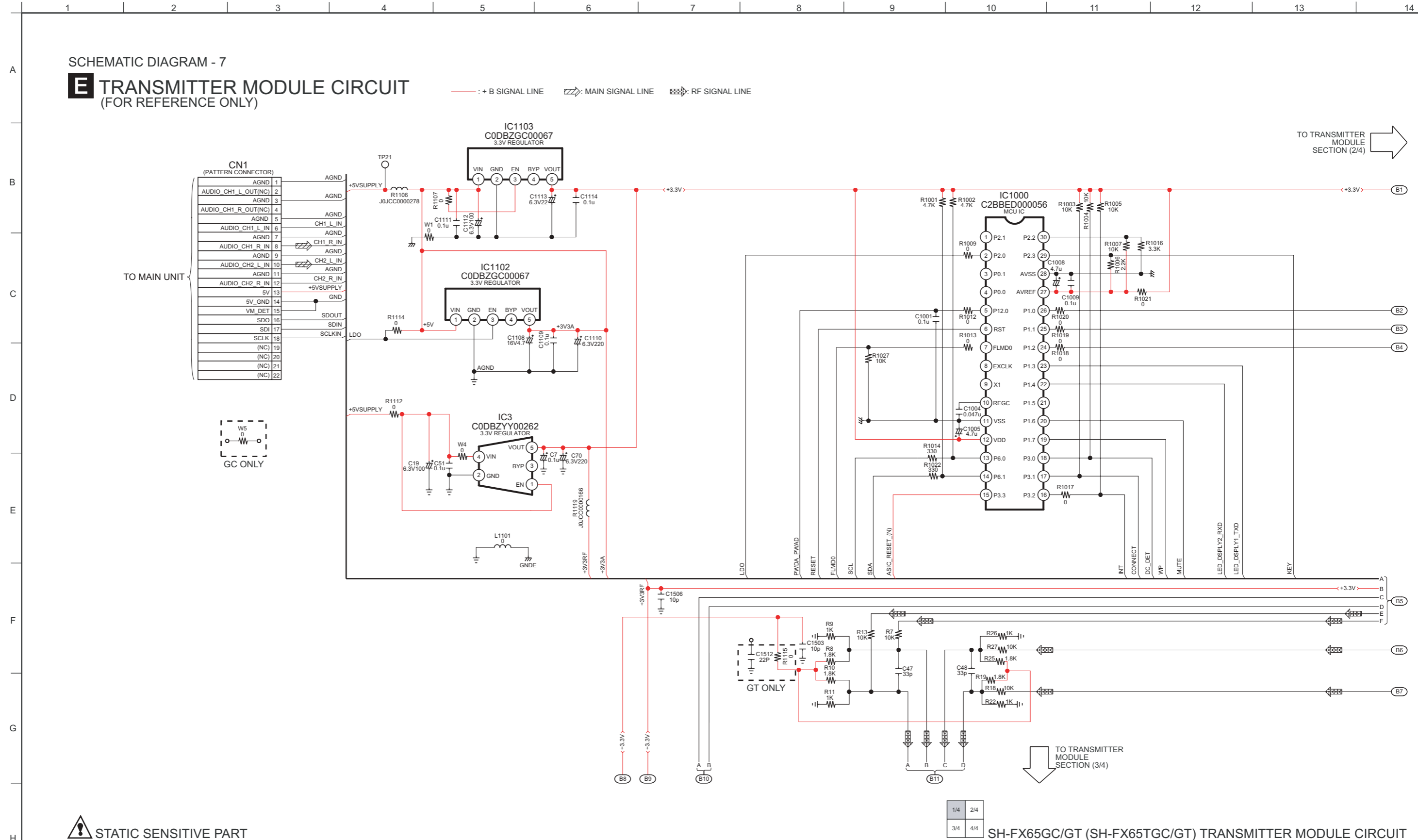
 STATIC SENSITIVE PART

16.3. TRANSMITTER MODULE CIRCUIT

SCHEMATIC DIAGRAM - 7

E TRANSMITTER MODULE CIRCUIT (FOR REFERENCE ONLY)

—: +B SIGNAL LINE ▨: MAIN SIGNAL LINE ▩: RF SIGNAL LINE



STATIC SENSITIVE PART


1/4	2/4
3/4	4/4

SH-FX65GC/GT (SH-FX65TGC/GT) TRANSMITTER MODULE CIRCUIT

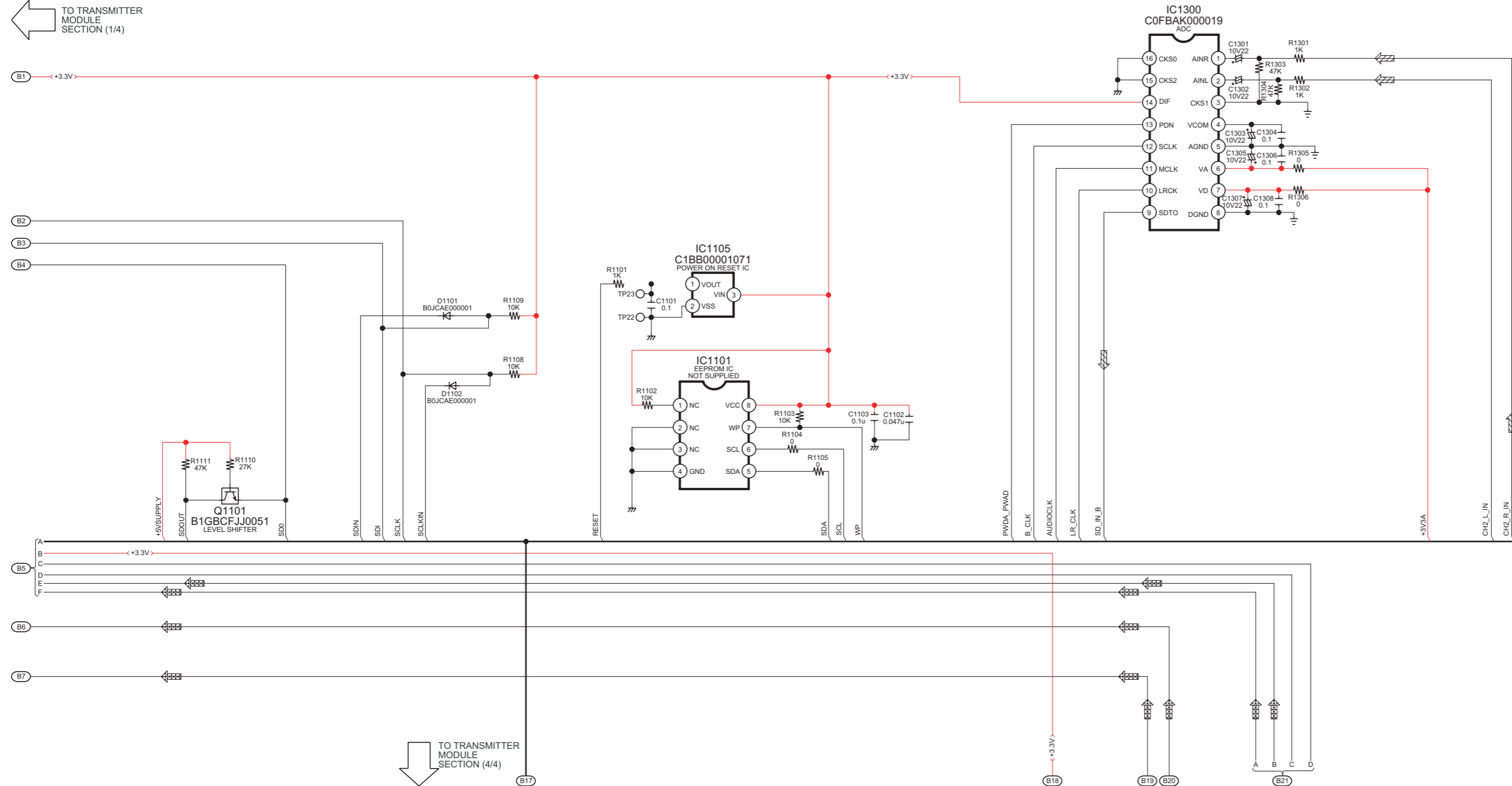
15 16 17 18 19 20 21 22 23 24 25 26 27 28

SCHEMATIC DIAGRAM - 8

E TRANSMITTER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— : + B SIGNAL LINE  : MAIN SIGNAL LINE  : RF SIGNAL LINE

← TO TRANSMITTER
MODULE
SECTION (1/4)



↓ TO TRANSMITTER
MODULE
SECTION (4/4)

 STATIC SENSITIVE PART

1/4	2/4
3/4	4/4

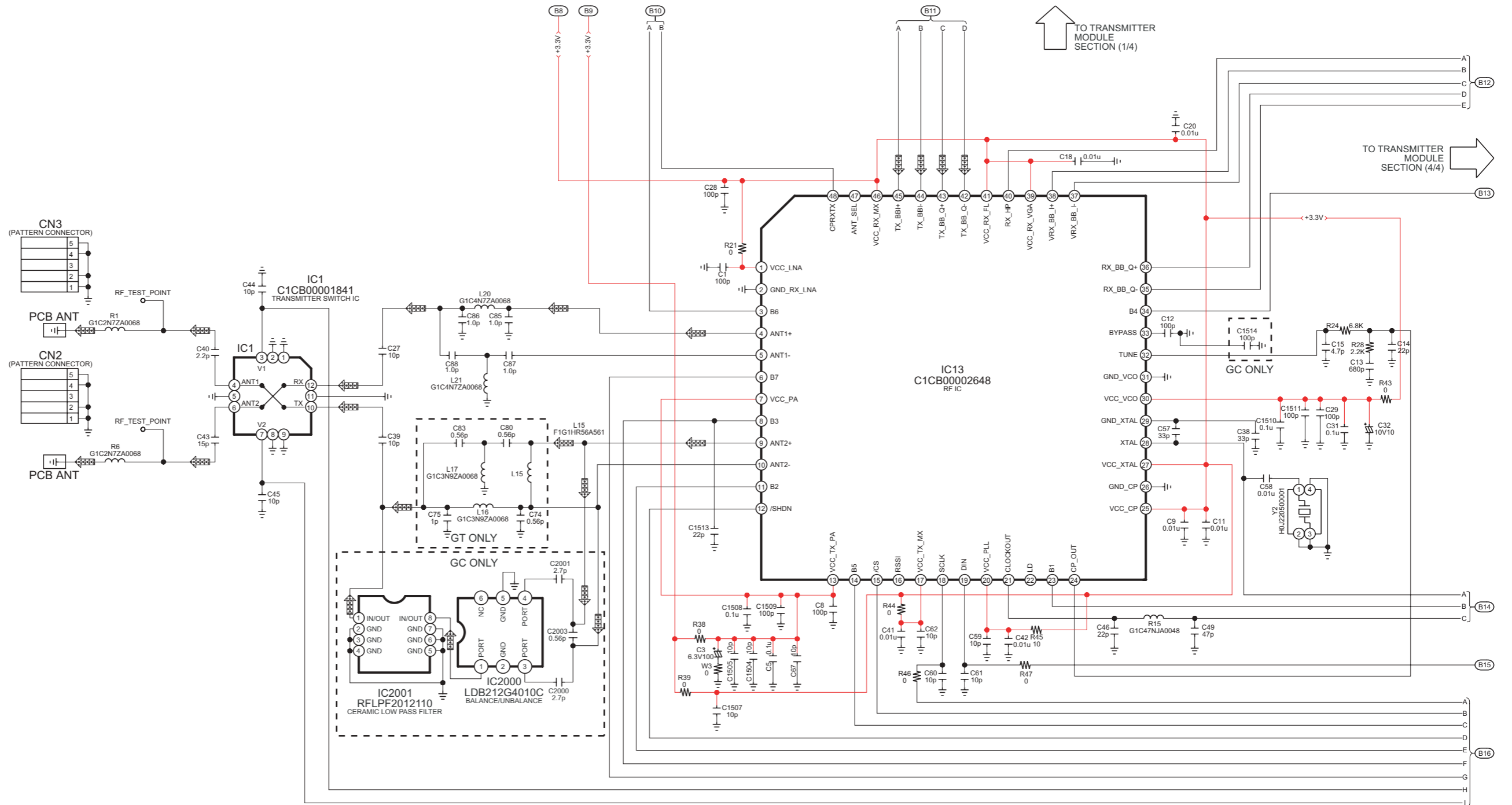
SH-FX65GC/GT (SH-FX65TGC/GT) TRANSMITTER MODULE CIRCUIT


A
B
C
D
E
F
G
H

SCHEMATIC DIAGRAM - 9

E TRANSMITTER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— : + B SIGNAL LINE  : MAIN SIGNAL LINE  : RF SIGNAL LINE



 STATIC SENSITIVE PART

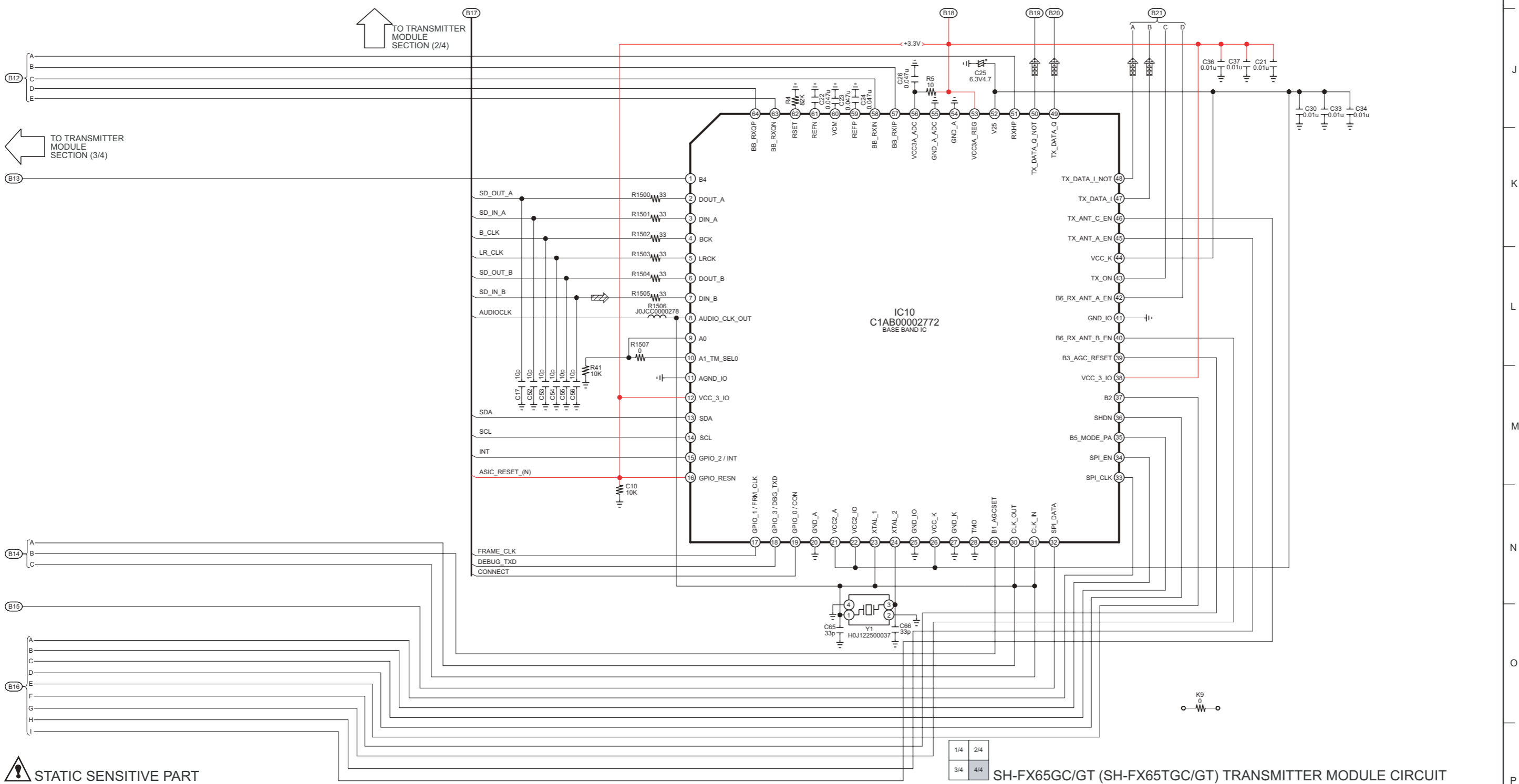
1/4	2/4
3/4	4/4

SH-FX65GC/GT (SH-FX65TGC/GT) TRANSMITTER MODULE CIRCUIT

SCHEMATIC DIAGRAM - 10

E TRANSMITTER MODULE CIRCUIT
(FOR REFERENCE ONLY)

— + B SIGNAL LINE MAIN SIGNAL LINE RF SIGNAL LINE



STATIC SENSITIVE PART

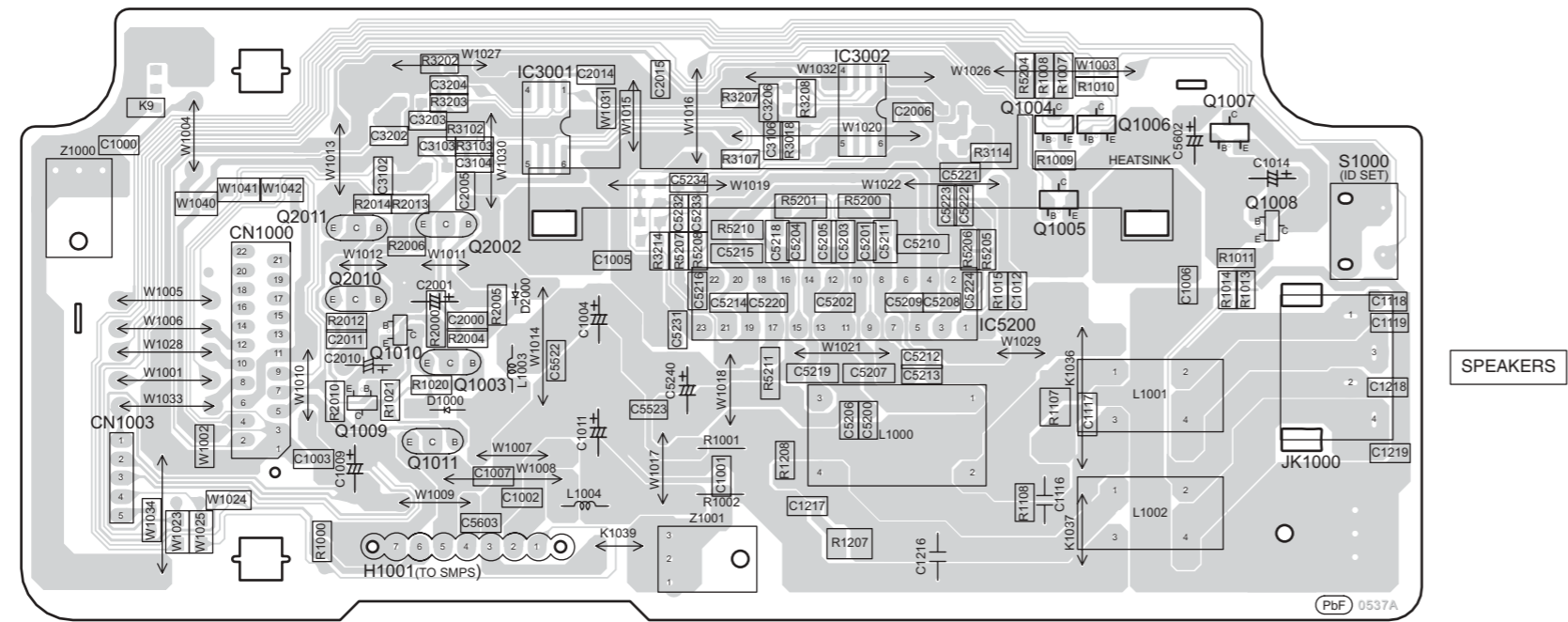
SH-FX65GC/GT (SH-FX65TGC/GT) TRANSMITTER MODULE CIRCUIT

17 Printed Circuit Board Diagram

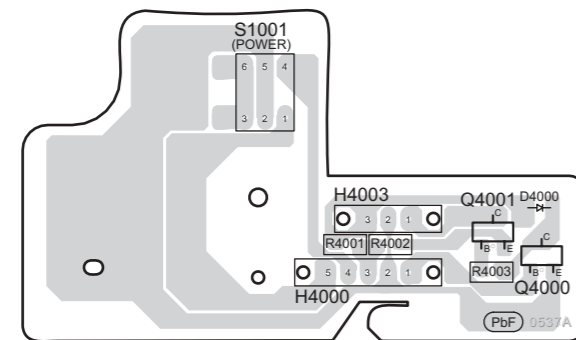
17.1. DAMP P.C.B, LED DRIVE P.C.B and LED P.C.B

H
G
F
E
D
C
B
A

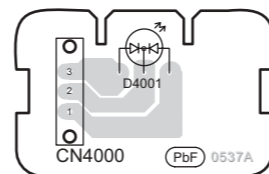
A DAMP P.C.B (REPX0584C)



B LED DRIVE P.C.B (REPX0584C)

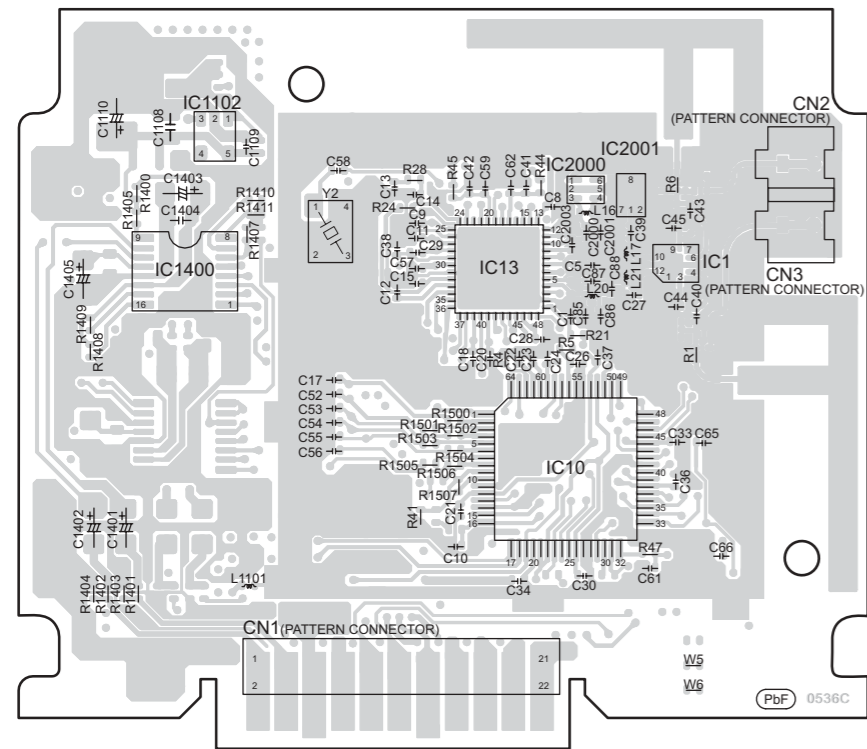


C LED P.C.B (REPX0584C)

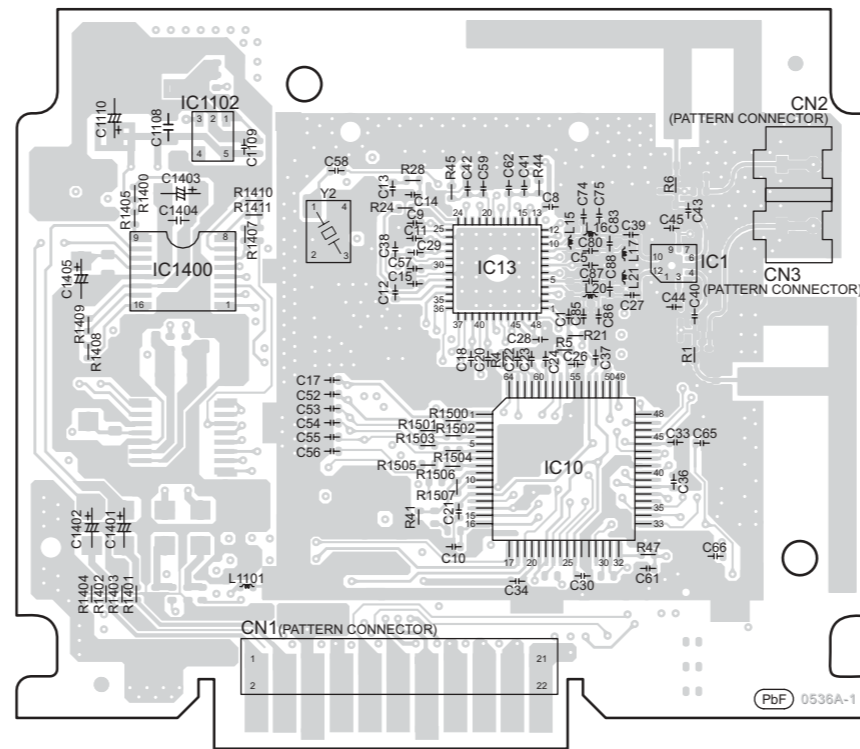


1 2 3 4 5 6 7 8 9 10 11 12 13

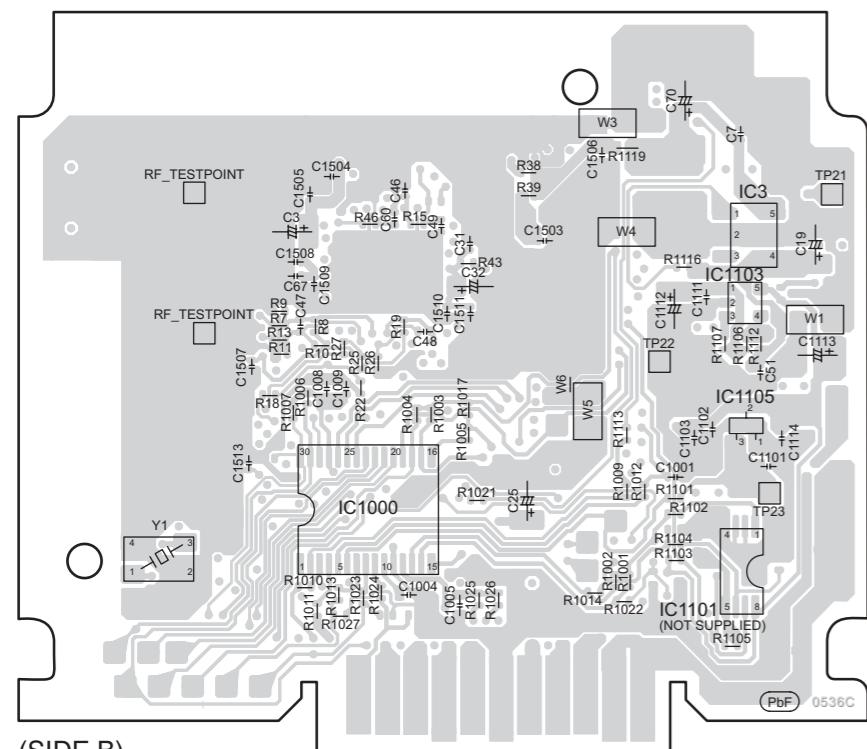
17.2. RECEIVER MODULE P.C.B

D RECEIVER MODULE P.C.B (REPX0583C...GC)
(FOR REFERENCE ONLY)

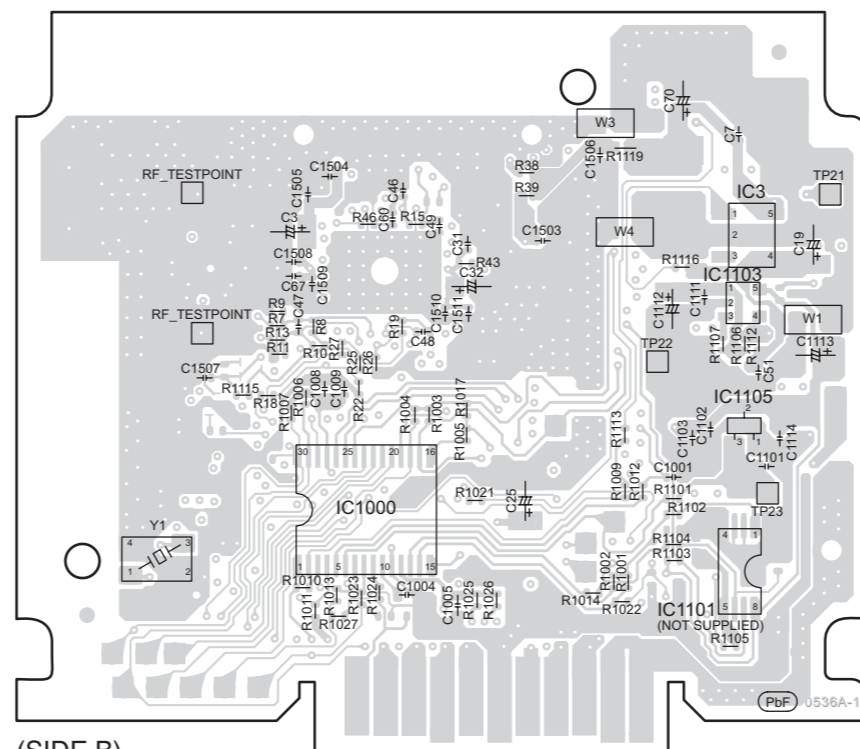
(SIDE A)

D RECEIVER MODULE P.C.B (REPX0583A...GT)
(FOR REFERENCE ONLY)

(SIDE A)



(SIDE B)

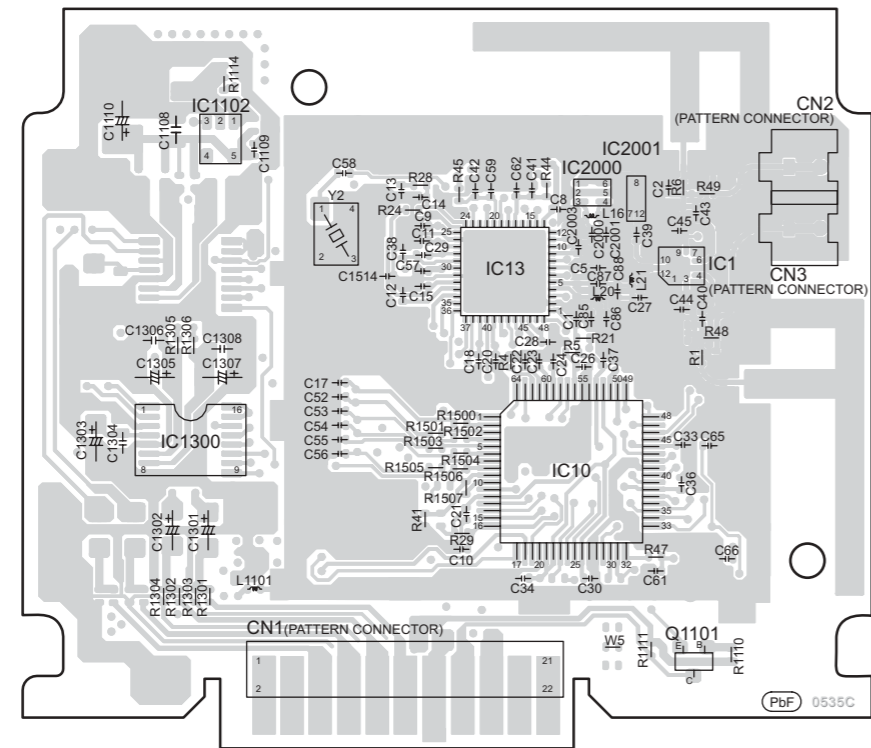


(SIDE B)

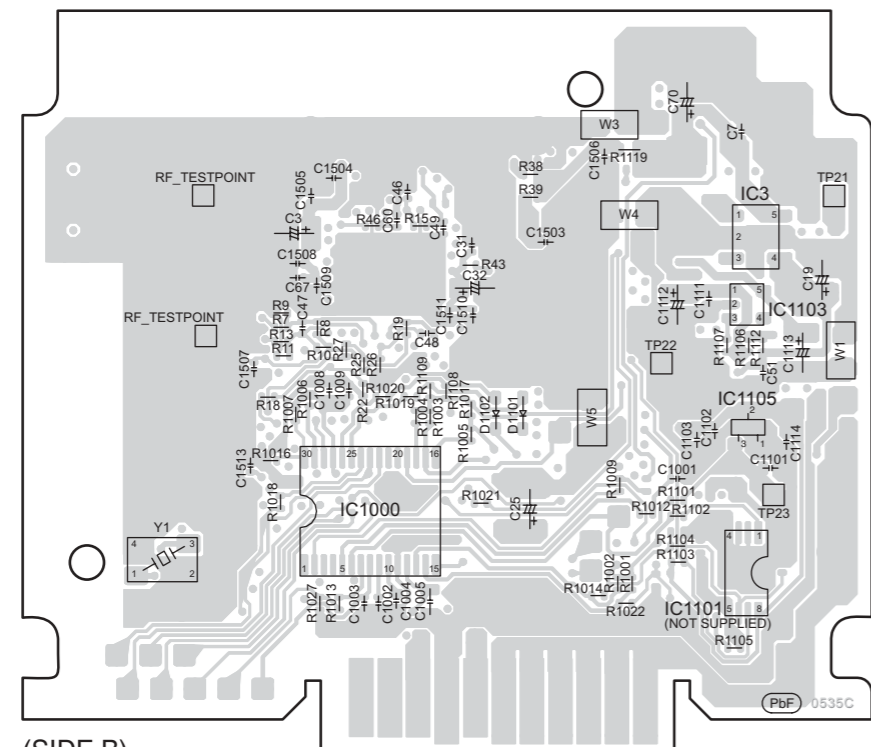
17.3. TRANSMITTER MODULE P.C.B

H
G
F
E
D
C
B
A

E TRANSMITTER MODULE P.C.B (REPX0582C...GC)
(FOR REFERENCE ONLY)

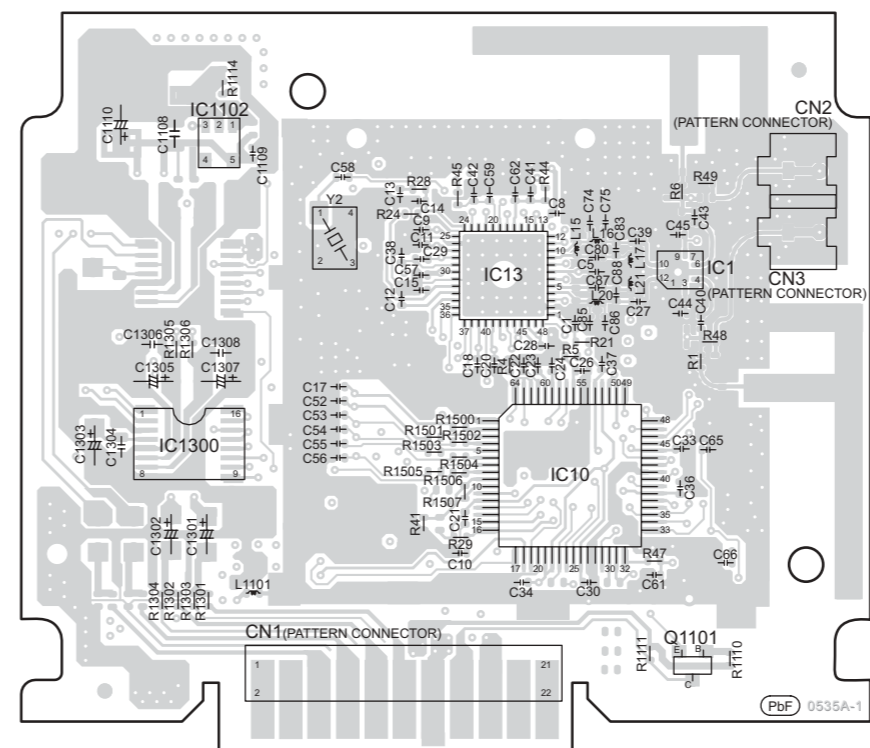


(SIDE A)

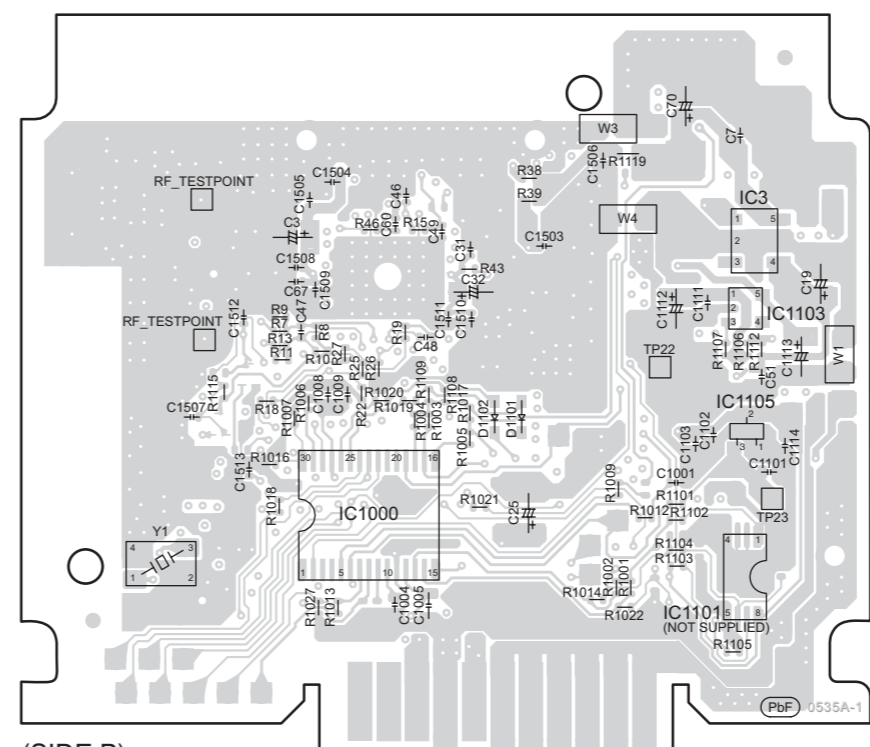


(SIDE B)

E TRANSMITTER MODULE P.C.B (REPX0582A...GT)
(FOR REFERENCE ONLY)



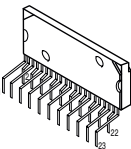
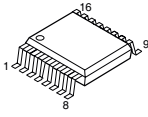
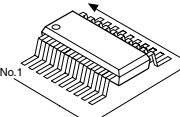
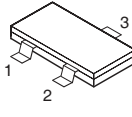
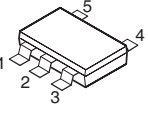
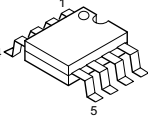
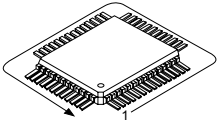
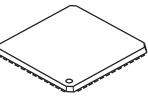
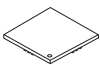
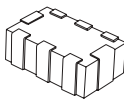
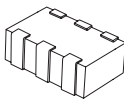
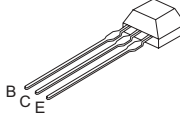
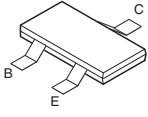
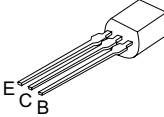
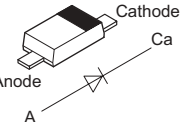
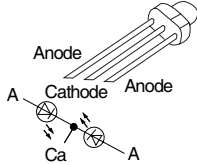
(SIDE A)



(SIDE B)

1 2 3 4 5 6 7 8 9 10 11 12 13

18 Illustration of IC's, Transistors and Diodes

<p>C1BA00000487</p> 	<p>C0FBAK000019 C0FBBK000066</p> 	<p>C2BBED000056 (30P) C3EBDC000070 (8P)</p> 	<p>C1BB00001071</p> 	<p>C0DBZGC00067 C0CBCBC00090 C0DBZYY00262</p> 	<p>C0ABBB000067</p> 
<p>C1AB00002772 (64P)</p> 	<p>C1CB00002648 (48P)</p> 	<p>C1CB00001841 (12P)</p> 	<p>RFLPF2012110 (8P)</p> 	<p>LDB212G4010C (6P)</p> 	<p>B1ACCF000094</p> 
<p>B1ADCE000012 B1GBCFJJ0051 B1ABCF000176 B1GDCFJJ0047 B1GBCFGG0030 B1GDCFGG0026</p> 	<p>B1ACKD000006 B1AAKD000012</p> 	<p>B0JCAE000001 B0ECKP000002 B0BC01600013 B0ACCK000005</p> 	<p>B3AGA0000096</p> 		

19 Terminal Functions of Integrated Circuits

19.1. IC10 (C1AB00002772): IC BASE BAND

Pin NO.	Terminal Name	I/O	Function
1	B4	I	RF transceiver control
2	DOUT_A	O	I ² S port A serial data output
3	DIN_A	-	I ² S port A serial data input
4	BCK	-	I ² S bit clock
5	LRCK	-	I ² S left/right clock
6	DOUT_B	O	I ² S port B serial data output
7	DIN_B	I	I ² S port B serial data input
8	AUDIO_CLK_OUT	O	Audio sample clock output
9	A0	-	A10=offset from I ² C base address 0x80
10	A1	-	A10=offset from I ² C base address 0x80
11	AGND_IO	-	Ground connection
12	VCC_3_IO	-	Power supply connection
13	SDA	I/O	I ² C serial data
14	SCL	-	I ² C serial clock
15	GPIO_2/INT	I/O	General purpose IO (special function: INT open collector)
16	RESN	-	Reset (active low). This pin is internally connected to a Schmitt Trigger
17	GPIO_1/FRM_CLK	I/O	General purpose IO (special function: Frame close signal)
18	GPIO_3/DBG_TXD	I/O	General purpose IO (special function: DEBUG TXD)
19	GPIO_0/CON	I/O	General purpose IO (special function: CONNECT)
20	GND_A	-	Ground Connection
21	VCC2A	-	2.5V power supply input
22	VCC2_IO	-	2.5V power supply input
23	XTAL1	-	Pin1 of Xtal oscillator circuit
24	XTAL2	-	Pin2 of Xtal oscillator circuit
25	GNDIO	-	Ground connection
26	VCCK	-	2.5V power supply input
27	GNDK	-	Ground connection
28	TMO	-	Test Mode selector (Always to GND)
29	B1_AGCSET	I	RF transceiver control
30	CLK_OUT	O	Output of Xtal_Osc circuit (pin 23, 24)
31	CLK_IN	I	Clock input for use with RF Xtal
32	SPI_DATA	O	RF transceiver control
33	SPI_CLK	O	RF transceiver control
34	SPI_EN	O	RF transceiver control
35	B5_MODE_PA	I	RF transceiver control
36	SHDN	I	RF transceiver control
37	B2	I	RF transceiver control
38	VCC3_IO	-	3.3V Power Supply connection
39	B3_AGCRESET	I	RF transceiver control
40	B7_RX_ANT_B_EN	I	RF transceiver control
41	GNDIO	-	Ground connection
42	B6_RX_ANT_A_EN	I	RF transceiver control
43	TX_ON	I	RF transceiver control
44	VCCK	-	2.5V Power Supply Connection
45	TX_ANT_A_EN	O	RF transceiver control
46	TX_ANT_C_EN	O	RF transceiver control
47	TX_DATA_I	O	BB I channel transmit data

Pin NO.	Terminal Name	I/O	Function
48	TX_DATA_I_NOT	O	BB I channel transmit data (complement)
49	TX_DATA_Q	O	BB Q channel transmit data
50	TX_DATA_Q_NOT	O	BB Q channel transmit data (complement)
51	RXHP	O	RF transceiver control
52	V25	-	2.5V Power Supply Output of internal voltage regulator (fed by external 3.3V connection)
53	VCC3AREG	-	3.3V input for internal 2.5V regulator
54	GND_A	-	Ground connection
55	GNDADC	-	Ground connection
56	VCCADC	-	3.3V power supply connection for internal ADC
57	BB_RXIP	I	BB I channel receiver input (positive node)
58	BB_RXIN	I	BB I channel receiver input (negative node)
59	REFP	-	Internally generated ADC reference voltage (decouple to ground). Sets maximum
60	VCM	-	Internally generated ADC common mode voltage (decouple to ground)
61	REFN	-	Internally generated ADC reference voltage (decouple to ground). Sets minimum
62	RSET	-	Resistor to set internal band gap reference (connect to ground via 82k resistor)
63	BBRXQN	I	BB I channel receiver input (negative node)
64	BBRXQP	I	BB I channel receiver input (positive node)

19.2. IC13 (C1CB00002648): IC RF

Pin NO.	Terminal Name	I/O	Function
1	VCC_LNA	-	LNA and PA DC supply voltage connection.
2	GND_RX_LNA	-	LNA ground.
3	B6	I	RX front-end and TX base band gain control bit 6
4	ANT1+	I	Receiver LNA input positive terminal.
5	ANT1-	I	Receiver LNA input negative terminal.
6	B7	I	RX front-end gain control bit 7.
7	VCC_PA	-	Supply voltage for PA.
8	B3	I	RX/TX base band AGC control bit 3.
9	ANT2+	O	RF output positive terminal.
10	ANT2-	O	RF output negative terminal.
11	B2	I	RX/TX base band AGC control bit 2.
12	/SHDN	I	Shutdown and standby mode selection.
13	VCC_T_XPA	-	Supply voltage for PA driver.
14	B5	I	RX/TX base band AGC control bit 5.
15	/CS	I	Chip select input for 3-wire serial interface (enables serial clocking).
16	RSSI	O	RSSI or Temperature (multiplexed) output.
17	VCC_TX_MX	-	Supply voltage for TX up converter.
18	SCLK	I	Clock input for 3-wire serial interface
19	DIN	I	Data input of 3-wire serial interface
20	VCC_PLL	-	Supply voltage for pll & Digital circuits
21	CLOCKOUT	O	Reference Clock output.
22	LD	O	Lock Detect Digital output of RF synthesizer
23	B1	I	RX/TX base band AGC control bit 1.

Pin NO.	Terminal Name	I/O	Function
24	CP_OUT	O	PLL charge pump output.
25	VCC_CP	-	Supply voltage for PLL charge pump.
26	GND_CP	-	Charge pump circuit ground connection
27	VCC_XTAL	-	Supply voltage for Crystal Oscillator.
28	XTAL	I	Crystal and load capacitor C1 connection or Reference Clock input.
29	GND_XTAL	-	Crystal and load capacitor gnd connection
30	VCC_VCO	-	Supply voltage for VCO1/VCO2.
31	GND_VCO	-	VCO ground connection.
32	TUNE	I	VCO frequency tuning control voltage input.
33	BYPASS	-	VCO bypass
34	B4	I	RX/TX base band AGC control bit 4.
35	RX_BB_Q-	O	Receiver baseband Q negative differential output.
36	RX_BB_Q+	O	Receiver baseband Q positive differential output.
37	RX_BB_I-	O	Receiver baseband I positive differential output.
38	RX_BB_I+	O	Receiver baseband I negative differential output.
39	VCC_RX_VGA	-	Supply voltage for RX VGA.
40	RX_HP	I	Receiver I and Q channel AC coupling high-pass corner frequency selection.
41	VCC_RX_FL	-	Supply voltage for RX Baseband filter.
42	TX_BB_Q-	I	Transmit baseband Q negative differential input.
43	TX_BB_Q+	I	Transmit baseband Q positive differential input.
44	TX_BB_I-	I	Transmit baseband I negative differential input.
45	TX_BB_I+	I	Transmit baseband I positive differential input.
46	VCC_RX_MX	-	Supply voltage for RX down converter
47	ANT_SEL	-	GND connection
48	CPRXTX	I	Transmit and Receiver mode selection

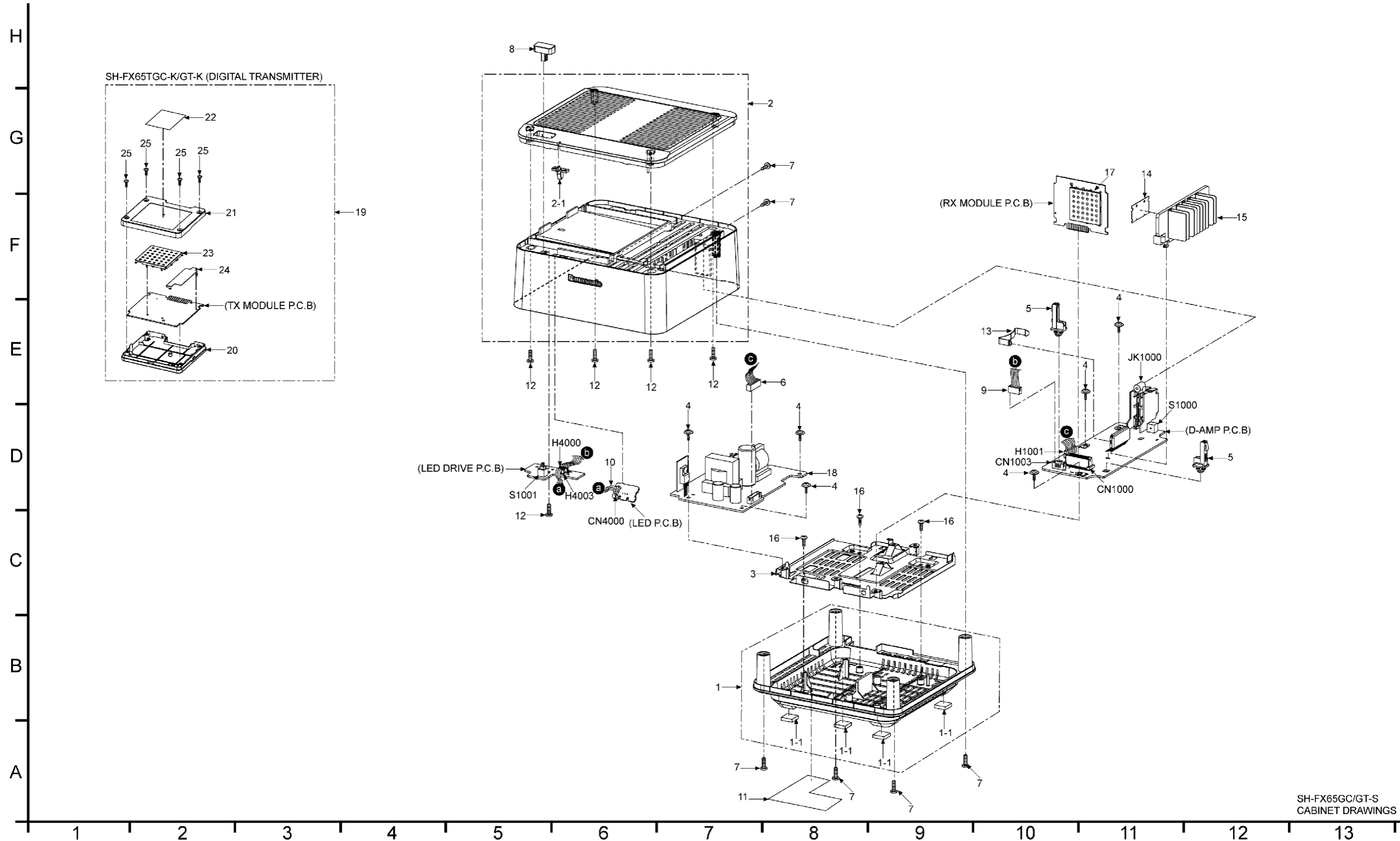
Pin NO.	Terminal Name	I/O	Function
16	P3.2	I	External interrupt request input
17	P3.1	I	Connection for on-chip debug mode setting pins
18	P3.0	I	External interrupt request input
19	P1.7	I	External count clock input
20	P1.6	O	External interrupt request input
21	P1.5	-	No Connection
22	P1.4	I	Serial data input to UART6
23	P1.3	O	Serial data output from UART6
24	P1.2	O	Serial data output from CSI10
25	P1.1	I	Serial data input to UART0
26	P1.0	O	Serial data output from UART0
27	AVREF	-	A/D converter reference voltage input
28	AVSS	-	A/D converter ground potential connection
29	P2.3	I	A/D converter analog input
30	P2.2	I	A/D converter analog input port 2

19.3. IC1000 (C2BBED000056): IC MCU

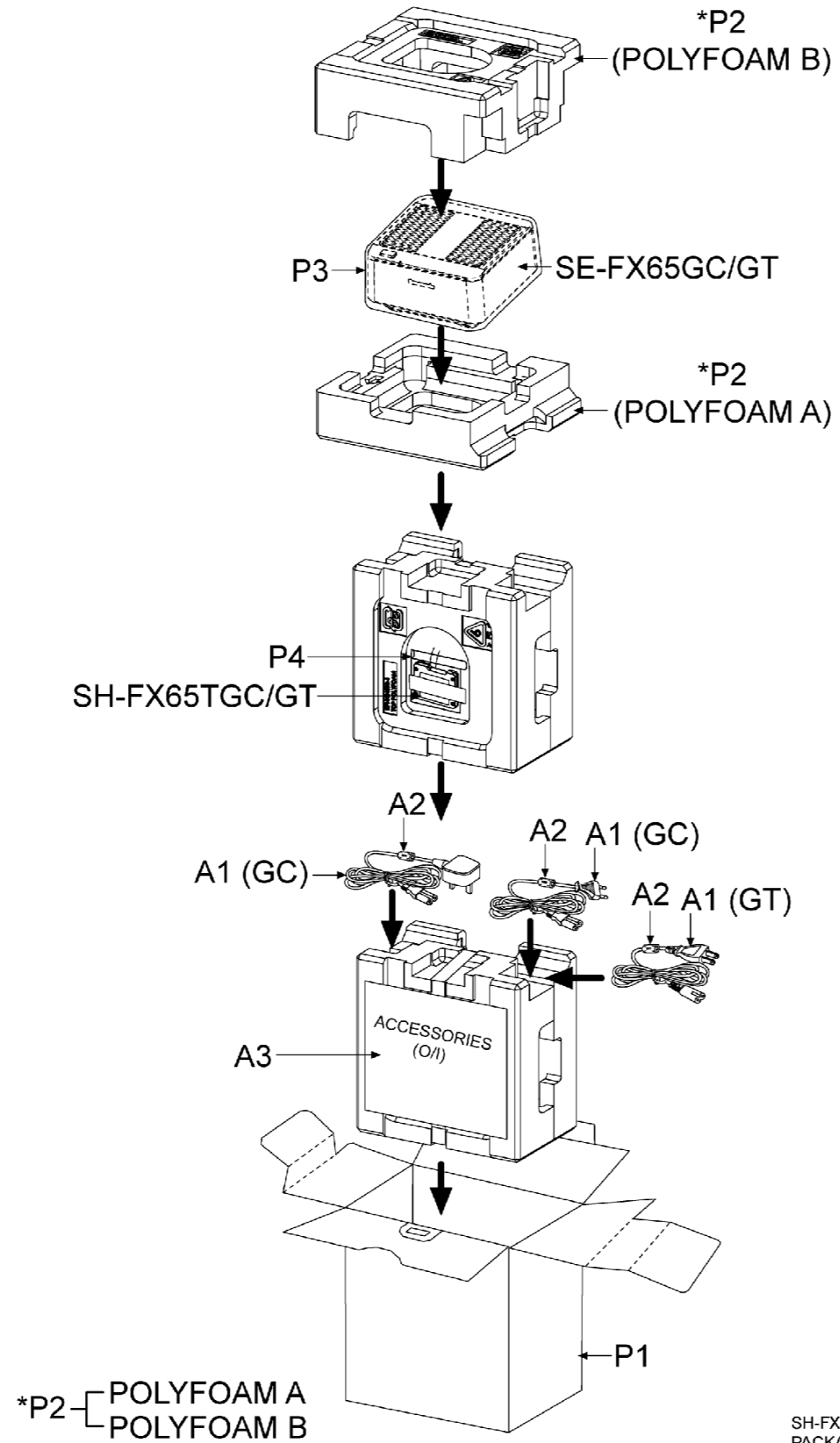
Pin NO.	Terminal Name	I/O	Function
1	P2.1	-	No Connection
2	P2.0	O	Port 2 (mode: LDO)
3	P0.1	O	Port 0 (mode: LINK)
4	P0.0	O	Port 0 (mode: PCONT)
5	P12.0	I	Potential input for external low-voltage detection
6	RST	I	System reset input
7	FLMD0	-	Flash memory programming mode setting
8	EXCLK	I	External clock input for main system clock
9	X1	-	Connecting resonator for main system clock
10	REGC	-	Connecting regulator output (2.5 V) stabilization capacitance for internal operation
11	VSS	-	Ground potential connection
12	VDD	-	Positive power supply
13	P6.0	I/O	Clock input/output for I ² C
14	P6.1	I/O	Serial data I/O for I ² C
15	P3.3	I	External interrupt request input

20 Exploded Views

20.1. Cabinet Parts Location



20.2. Packaging Condition For SH-FX65GC/GT-S



21 Service Hint

The following kit assembly is for purpose for parts replacement:-

Models	Part No.	Part Name & Description	Remarks
SH-FX65GC-S	RFKVEFX65GCS	TX / RX KIT ASSEMBLY	[M] (RTL)
SH-FX65GT-S	RFKVEFX65P-K	TX / RX KIT ASSEMBLY	[M] (RTL)
SH-FX65GC-S	RFKVHFX65GCS	TX CASE ASSEMBLY	[M] (RTL)
SH-FX65GT-S	RFKVHFX65TPK	TX CASE ASSEMBLY	[M] (RTL)

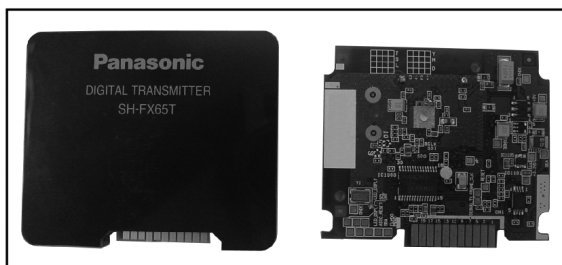
[M] indicates parts that are supplied by PAVCSG.

Table 1

21.1. TX / RX KIT ASSEMBLY

TX / RX kit assembly consists of the transmitter card (Tx Module with casing) and the Rx Module P.C.B

RFKVEFX65GCS/RFKVEFX65P-K



Note: Please carry out pairing for ID setting. Refer to section 9.2 of this document on procedures

21.2. TX CASE ASSEMBLY

TX card assembly consists of the Tx Module P.C.B in assembled condition with top & bottom casing.

RFKVHFX65GCS/RFKVHFX65TPK



Note: Please carry out pairing for ID setting. Refer to section 9.2 of this document on procedures

22 Replacement Parts List

Notes:

- Important safety notice:

Components identified by Δ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardent (resistors), high-quality sound (capacitors), low noise (resistors), etc are used.

When replacing any of these components, be sure to use only manufacturer's specified parts shown in the parts list.

- The parenthesized indications in the Remarks columns specify the areas or colour. (Refer to the cover page for area or colour)
Parts without these indications can be used for all areas.
- Capacitor values are in microfarads (μF) unless specified otherwise, P= Pico-farads (pF), F= Farads.
- Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM).
- The marking (RTL) indicates that the Retention Time is limited for this items. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of a availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.
- [M] Indicates in the Remarks columns indicates parts supplied by PAVCSG.
- Reference for O/I book languages are as follows:

Ar:	Arabic	Du:	Dutch	It:	Italian	Sp:	Spanish
Cf:	Canadian French	En:	English	Ko:	Korean	Sw:	Swedish
Cz:	Czech	Fr:	French	Po:	Polish	Co:	Traditional Chinese
Da:	Danish	Ge:	German	Ru:	Russian	Cn:	Simplified Chinese
Pe:	Persian	Ur:	Ukraine	Pr:	Portuguese		

Caution:

1. This parts list does not include parts for SMPS module.

* For reference only

22.1. Parts List (SH-FX65)

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RYKX0342-K1	BOTTOM CAB ASS'Y	[M]
1-1	RKAX0028-K	LEG CUSHION	[M]
2	RYPX0173-K1	TOP PANEL ASS'Y	[M]
2-1	RGLX0144-Q	POWER LIGHT CHIP	[M]
3	RMKX0133A	BOTTOM CHASSIS	[M]
4	RHD30111-3	SCREW	[M]
5	RMNX0224	PCB HOLDER	[M]
6	REXX0583	7P WIRE	[M]
7	XTB3+10JFJ	SCREW	[M]
8	RGUX0713-K	POWER BUTTON	[M]
9	REXX0584-1	5P FLAT WIRE	[M]
10	REXX0595-1	WIRE	[M]
11	RGNX0483-K	NAMEPLATE	[M] GC
11	RGNX0547-K	NAMEPLATE	[M] GT
12	RHD26046	SCREW	[M]
13	RMCX0035	HEAT SINK CLIP	[M]
14	RMZX0026-1	IC INSULATOR A	[M]
15	RXXX0095-K1	HEAT SINK	[M]
16	XTB3+8JFJ	SCREW	[M]
17	RSCX0157	RX SHIELD PLATE	[M]
18	NOAE6GY00001	SMPS MODULE	[M] Δ
19	RFKVHFX65GCS	TRANS/CASE ASS'Y	[M] GC
19	RFKVHFX65TPK	TRANS/CASE ASS'Y	[M] GT
20	RGPX0285-K	TRANS/CARD CASE TOP	[M]
21	RGPX0286-K	TRANS/CARD CASE BTM	[M]
22	RGNX0484-K	NAMEPLATE	[M] GC
22	RGNX0548-K	NAMEPLATE	[M] GT
23	RSCX0157	TX SHIELD PLATE	[M]
24	RMQX0268	GROUND PLATE	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
25	XTB2+6GFJK	SCREW	[M]
		PRINTED CIRCUIT BOARD	
	REPX0582C	TRANSMITTER MODULE P.C.B	[M] (RTL) GC
	REPX0582A	TRANSMITTER MODULE P.C.B	[M] (RTL) GT
	REPX0583C	RECEIVER MODULE P.C.B	[M] (RTL) GC
	REPX0583A	RECEIVER MODULE P.C.B	[M] (RTL) GT
	REPX0584C	DAMP P.C.B / LED DRIVE P.C.B / LED P.C.B	[M] (RTL)
	RFKVEFX65GCS	TX / RX KIT ASSEMBLY	[M] (RTL) GC
	RFKVEFX65P-K	TX / RX KIT ASSEMBLY	[M] (RTL) GT
		INTEGRATED CIRCUITS	
IC1	C1CB00001841	IC TRANSFER SWITCH	[M] *
IC3	C0DBZY00262	IC 3.3V REGULATOR	[M] *
IC10	C1AB00002772	IC BASE BAND	[M] *
IC13	C1CB00002648	IC RF	[M] *
IC1000	C2BBED000056	IC MCU	[M]
IC1102	C0CBCBC00090	IC 3.3V LDO	[M]
IC1103	C0CBCBC00090	IC 3.3V LDO	[M]
IC1105	C1BB00001071	IC POWER ON RESET	[M]
IC1400	C0FBBK000066	IC DAC	[M]
IC2000	LDB212G4010C	IC BALUN	[M] GC
IC2001	RFLPF2012110	IC LPF	[M] GC
IC3001	C0ABBB000067	IC AMP	[M]
IC3002	C0ABBB000067	IC AMP	[M]
IC5200	C1BA00000487	IC DIGITAL AMP	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
		TRANSISTORS	
Q1003	B1ACKD000006	TRANSISTOR	[M]
Q1004	B1ADCE000012	TRANSISTOR	[M]
Q1005	B1GBCFJJ0051	TRANSISTOR	[M]
Q1006	B1GBCFGG0030	TRANSISTOR	[M]
Q1007	B1ABCF000176	TRANSISTOR	[M]
Q1008	B1ABCF000176	TRANSISTOR	[M]
Q1009	B1GBCFJJ0051	TRANSISTOR	[M]
Q1010	B1GDCFJJ0047	TRANSISTOR	[M]
Q1011	B1AAKD000012	TRANSISTOR	[M]
Q2002	B1AAKD000012	TRANSISTOR	[M]
Q2010	B1ACCF000094	TRANSISTOR	[M]
Q2011	B1ACKD000006	TRANSISTOR	[M]
Q4000	B1GBCFGG0030	TRANSISTOR	[M]
Q4001	B1GDCFGG0026	TRANSISTOR	[M]
		DIODES	
D1000	BOECKP000002	DIODE	[M]
D2000	BOBC01600013	DIODE	[M]
D4000	BOACCK000005	DIODE	[M]
D4001	B3AGA0000096	DIODE	[M]
		SWITCHES	
S1000	EVQPC105K	SW ID SET	[M]
S1001	K0F122B00107	SW POWER	[M]
		CONNECTORS	
CN1000	K1MY22A00003	TRANS/CARD CONNECTOR	[M]
CN1003	K1KA05AA0193	CONNECTOR	[M]
CN4000	K1YZ03000010	3P CABLE HOLDER	[M]
		COILS & TRANSFORMERS	
L15	F1G1HR56A561	INDUCTOR	[M] *GT
L16	G1C3N9ZA0068	CHIP INDUCTOR	[M] *GT
L17	G1C3N9ZA0068	CHIP INDUCTOR	[M] *GT
L20	G1C4N7ZA0068	CHIP INDUCTOR	[M] *
L21	G1C4N7ZA0068	CHIP INDUCTOR	[M] *
L1000	G0A150L00003	LINE CHOKE COIL	[M]
L1001	G0B9R5K00003	LINE CHOKE COIL	[M]
L1002	G0B9R5K00003	LINE CHOKE COIL	[M]
L1003	J0JKB0000020	EMI BEAD CORE	[M]
L1004	J0JKB0000020	EMI BEAD CORE	[M]
L1101	ERJ2GE0R00X	CHIP JUMPER	[M]
		COMPONENT COMBINATION	
Z1000	K4CZ01000027	TERMINAL	[M]
Z1001	K4CZ01000027	TERMINAL	[M]
Y1	H0J122500037	CRYSTAL	[M] *
Y2	H0J220500001	CRYSTAL	[M] *
		FUSE	
F1	K5D312BNA005	FUSE	[M]
		HOLDERS	
H1001	K1YF07000003	7P WIRE HOLDER	[M]
H4000	K1YZ05000005	5P CABLE HOLDER	[M]
H4003	K1YZ03000010	3P CABLE HOLDER	[M]
		JACKS	
JK1000	K4BC04B00107	JK SPEAKER	[M]
		WIRES	

Ref. No.	Part No.	Part Name & Description	Remarks
W1	ERJ6GEY0R00V	CHIP RESISTOR	[M] *
W3	ERJ6GEY0R00V	CHIP RESISTOR	[M] *
W4	ERJ6GEY0R00V	CHIP RESISTOR	[M] *
W5	ERJ3GEY0R00V	CHIP JUMPER	[M] GC
W6	ERJ2GE0R00X	CHIP JUMPER	[M] GC
W1002	ERJ3GEY0R00V	CHIP JUMPER	[M]
W1003	ERJ3GEY0R00V	CHIP JUMPER	[M]
W1023	ERJ6GEY0R00V	CHIP RESISTOR	[M]
W1024	ERJ3GEY0R00V	CHIP JUMPER	[M]
W1025	ERJ6GEY0R00V	CHIP RESISTOR	[M]
W1031	ERJ3GEY0R00V	CHIP JUMPER	[M]
W1034	ERJ3GEY0R00V	CHIP JUMPER	[M]
W1040	ERJ6GEY0R00V	CHIP RESISTOR	[M]
W1041	ERJ6GEY0R00V	CHIP RESISTOR	[M]
W1042	ERJ6GEY0R00V	CHIP RESISTOR	[M]
		PACKING MATERIALS	
P1	RPKX0041	GIFT BOX	[M] GC
P1	RPKX0044	GIFT BOX	[M] GT
P2	RPNX0459-1	POLYFOAM	[M]
P3	RPFX0203	MIRAMAT BAG	[M]
P4	RPFX0202	PE BAG (CARD)	[M]
		ACCESSORIES	
A1	K2CA2CA00027	AC CORD	[M] GT △
A1	K2CQ2CA00002	AC CORD	[M] GC △
A1	K2CT3CA00004	AC CORD	[M] GC △
A2	J0KG00000037	AC CLAMP FILTER	[M]
A3	RQTX0048-L	O/I BOOK (En)	[M] GC
A3	RQTX0049-G	O/I BOOK (Cn)	[M] GC
A3	RQTX0081-K	O/I BOOK (Co)	[M] GT
		RESISTORS	
R1	G1C2N7ZA0068	INDUCTOR	[M] *
R4	ERJ2GEJ823X	82K 1/32W	[M] *
R5	ERJ2GEJ100X	10 1/32W	[M] *
R6	G1C2N7ZA0068	INDUCTOR	[M] *
R7	ERJ2GEJ103X	10K 1/32W	[M] *
R8	ERJ2GEJ182X	1.8K 1/32W	[M] *
R9	ERJ2GEJ102X	1K 1/32W	[M] *
R10	ERJ2GEJ182X	1.8K 1/32W	[M] *
R11	ERJ2GEJ102X	1K 1/32W	[M] *
R13	ERJ2GEJ103X	10K 1/32W	[M] *
R15	G1C47NJA0048	INDUCTOR	[M] *
R18	ERJ2GEJ103X	10K 1/32W	[M] *
R19	ERJ2GEJ182X	1.8K 1/32W	[M] *
R21	ERJ2GE0R00X	0 1/32W	[M] *
R22	ERJ2GEJ102X	1K 1/32W	[M] *
R24	ERJ2GEJ682X	6.8K 1/32W	[M] *
R25	ERJ2GEJ182X	1.8K 1/32W	[M] *
R26	ERJ2GEJ102X	1K 1/32W	[M] *
R27	ERJ2GEJ103X	10K 1/32W	[M] *
R28	ERJ2GEJ222X	2.2K 1/32W	[M] *
R38	ERJ2GE0R00X	0 1/32W	[M] *
R39	ERJ2GE0R00X	0 1/32W	[M] *
R41	ERJ2GEJ103X	10K 1/32W	[M] *
R43	ERJ2GE0R00X	0 1/32W	[M] *
R44	ERJ2GE0R00X	0 1/32W	[M] *
R45	ERJ2GEJ100X	10 1/32W	[M] *
R46	ERJ2GE0R00X	0 1/32W	[M] *
R47	ERJ2GE0R00X	0 1/32W	[M] *
R1000	ERJ3GEYJ473V	47K 1/16W	[M]
R1001	ERG2SJ122E	1.2K 1/32W	[M]
R1001	ERJ2GEJ472X	4.7K 1/32W	[M]
R1002	ERG2SJ122E	1.2K 1/32W	[M]
R1002	ERJ2GEJ472X	4.7K 1/32W	[M]
R1003	ERJ2GEJ103X	10K 1/32W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R1004	ERJ2GEJ103X	10K 1/32W	[M]
R1005	ERJ2GEJ103X	10K 1/32W	[M]
R1006	ERJ2GEJ222X	2.2K 1/32W	[M]
R1007	ERJ2GEJ103X	10K 1/32W	[M]
R1007	ERJ3GEYJ122V	1.2K 1/16W	[M]
R1008	ERJ3GEYJ122V	1.2K 1/16W	[M]
R1009	ERJ2GE0R00X	0 1/32W	[M]
R1009	ERJ3GEYJ472V	4.7K 1/16W	[M]
R1010	ERJ2GE0R00X	0 1/32W	[M]
R1010	ERJ3GEY0R00V	0 1/16W	[M]
R1011	ERJ2GE0R00X	0 1/32W	[M]
R1011	ERJ3GEYJ822V	8.2K 1/16W	[M]
R1012	ERJ2GE0R00X	0 1/32W	[M]
R1013	ERJ2GE0R00X	0 1/32W	[M]
R1013	ERJ3GEYJ473V	47K 1/16W	[M]
R1014	ERJ2GEJ331X	330 1/32W	[M]
R1014	ERJ3GEYJ473V	47K 1/16W	[M]
R1015	ERJ3GEYJ333V	33K 1/16W	[M]
R1017	ERJ2GE0R00X	0 1/32W	[M]
R1020	ERJ3GEYJ273V	27K 1/16W	[M]
R1021	ERJ2GE0R00X	0 1/32W	[M]
R1021	ERJ3GEYJ823V	82K 1/16W	[M]
R1022	ERJ2GEJ331X	330 1/32W	[M]
R1023	ERJ2GE0R00X	0 1/32W	[M]
R1024	ERJ2GE0R00X	0 1/32W	[M]
R1025	ERJ2GEJ103X	10K 1/32W	[M]
R1026	ERJ2GEJ103X	10K 1/32W	[M]
R1027	ERJ2GEJ103X	10K 1/32W	[M]
R1101	ERJ2GEJ102X	1K 1/32W	[M]
R1102	ERJ2GEJ103X	10K 1/32W	[M]
R1103	ERJ2GEJ103X	10K 1/32W	[M]
R1104	ERJ2GE0R00X	0 1/32W	[M]
R1105	ERJ2GE0R00X	0 1/32W	[M]
R1106	ERJ2GE0R00X	0 1/32W	[M]
R1107	ERJ1TYJ220U	22 1/8W	[M]
R1107	ERJ2GE0R00X	0 1/32W	[M]
R1108	ERJ3GEYJ562V	5.6K 1/16W	[M]
R1112	ERJ2GE0R00X	0 1/32W	[M]
R1113	ERJ2GE0R00X	0 1/32W	[M]
R1115	ERJ2GE0R00X	0 1/32W	[M]GT
R1116	ERJ2GE0R00X	0 1/32W	[M]
R1119	J0JCC0000166	INDUCTOR	[M]
R1207	ERJ1TYJ220U	22 1/8W	[M]
R1208	ERJ3GEYJ562V	5.6K 1/16W	[M]
R1400	ERJ2GE0R00X	0 1/32W	[M]
R1401	ERJ2GEJ102X	1K 1/32W	[M]
R1402	ERJ2GEJ102X	1K 1/32W	[M]
R1403	ERJ2GEJ473X	47K 1/32W	[M]
R1404	ERJ2GEJ473X	47K 1/32W	[M]
R1405	ERJ2GE0R00X	0 1/32W	[M]
R1407	ERJ2GE0R00X	0 1/32W	[M]
R1408	ERJ2GE0R00X	0 1/32W	[M]
R1409	ERJ2GE0R00X	0 1/32W	[M]
R1410	ERJ2GE0R00X	0 1/32W	[M]
R1411	ERJ2GE0R00X	0 1/32W	[M]
R1500	ERJ2GEJ330X	33 1/32W	[M]
R1501	ERJ2GEJ330X	33 1/32W	[M]
R1502	ERJ2GEJ330X	33 1/32W	[M]
R1503	ERJ2GEJ330X	33 1/32W	[M]
R1504	ERJ2GEJ330X	33 1/32W	[M]
R1505	ERJ2GEJ330X	33 1/32W	[M]
R1506	J0JCC0000278	INDUCTOR	[M]
R1507	ERJ2GE0R00X	0 1/32W	[M]
R2000	ERJ3GEYJ220V	22 1/16W	[M]
R2004	ERJ3GEYJ272V	2.7K 1/16W	[M]
R2005	ERJ3GEYJ270V	27 1/16W	[M]
R2006	ERJ3GEYJ103V	10K 1/16W	[M]
R2010	ERJ3GEYJ220V	22 1/16W	[M]
R2012	ERJ3GEYJ272V	2.7K 1/16W	[M]
R2013	ERJ3GEYJ822V	8.2K 1/16W	[M]
R2014	ERJ3GEYJ561V	560 1/16W	[M]
R3018	ERJ3GEYJ561V	560 1/16W	[M]
R3102	ERJ3GEYJ562V	5.6K 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R3103	ERJ3GEYJ332V	3.3K 1/16W	[M]
R3107	ERJ3GEYJ821V	820 1/16W	[M]
R3114	ERJ3GEY0R00V	0 1/16W	[M]
R3202	ERJ3GEYJ562V	5.6K 1/16W	[M]
R3203	ERJ3GEYJ332V	3.3K 1/16W	[M]
R3207	ERJ3GEYJ821V	820 1/16W	[M]
R3208	ERJ3GEYJ561V	560 1/16W	[M]
R3214	ERJ3GEY0R00V	0 1/16W	[M]
R4001	ERJ3GEYJ271V	270 1/16W	[M]
R4002	ERJ3GEYJ221V	220 1/16W	[M]
R4003	ERJ3GEY0R00V	0 1/16W	[M]
R5200	ERJ8GEYJ100V	10 1/8W	[M]
R5201	ERJ8GEYJ100V	10 1/8W	[M]
R5204	ERJ3GEYJ152V	1.5K 1/16W	[M]
R5205	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5206	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5207	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5208	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5210	ERJ8GEYJ100V	10 1/8W	[M]
R5211	ERJ8GEYJ100V	10 1/8W	[M]
K9	ERJ3GEY0R00V	CHIP JUMPER	[M]
		CAPACITORS	
C1	ECJ0EC1H101J	100P 50V	[M] *
C3	F3G0J107A035	100 6.3V	[M] *
C5	ECJ0EF1C104Z	0.1 16V	[M] *
C7	ECJ0EF1C104Z	0.1 16V	[M] *
C8	ECJ0EC1H101J	100P 50V	[M] *
C9	ECJ0EB1C103K	0.01 16V	[M] *
C10	ERJ2GEJ103X	10K 1/32W	[M] *
C11	ECJ0EB1C103K	0.01 16V	[M] *
C12	ECJ0EC1H101J	100P 50V	[M] *
C13	ECJ0EB1E681K	680P 25V	[M] *
C14	ECJ0EC1H220J	22P 50V	[M] *
C15	F1G1H4R7A564	4.7P 50V	[M] *
C17	ECJ0EC1H100D	10P 50V	[M] *
C18	ECJ0EB1C103K	0.01 16V	[M] *
C19	F3G0J107A035	100 6.3V	[M] *
C20	ECJ0EB1C103K	0.01 16V	[M] *
C21	ECJ0EB1C103K	0.01 16V	[M] *
C22	ECJ0EB1A473K	0.047 10V	[M] *
C23	ECJ0EB1A473K	0.047 10V	[M] *
C24	ECJ0EB1A473K	0.047 10V	[M] *
C25	F3F1A475A062	4.7 10V	[M] *
C26	ECJ0EB1A473K	0.047 10V	[M] *
C27	ECJ0EC1H100D	10P 50V	[M] *
C28	ECJ0EC1H101J	100P 50V	[M] *
C29	ECJ0EC1H101J	100P 50V	[M] *
C30	ECJ0EB1C103K	0.01 16V	[M] *
C31	ECJ0EF1C104Z	0.1 16V	[M] *
C32	F1J1A106A041	10 10V	[M] *
C33	ECJ0EB1C103K	0.01 16V	[M] *
C34	ECJ0EB1C103K	0.01 16V	[M] *
C36	ECJ0EB1C103K	0.01 16V	[M] *
C37	ECJ0EB1C103K	0.01 16V	[M] *
C38	ECJ0EC1H330J	33P 50V	[M] *
C39	ECJ0EC1H100D	10P 50V	[M] *
C40	F1G1H2R2A609	2.2P 50V	[M] *
C41	ECJ0EB1C103K	0.01 16V	[M] *
C42	ECJ0EB1C103K	0.01 16V	[M] *
C43	ECJ0EC1H150J	15P 50V	[M] *
C44	ECJ0EC1H100D	10P 50V	[M] *
C45	ECJ0EC1H100D	10P 50V	[M] *
C46	ECJ0EC1H220J	22P 50V	[M] *
C47	ECJ0EC1H330J	33P 50V	[M] *
C48	ECJ0EC1H330J	33P 50V	[M] *
C49	ECJ0EC1H470J	47P 50V	[M] *
C51	ECJ0EF1C104Z	0.1 16V	[M] *
C52	ECJ0EC1H100D	10P 50V	[M] *
C53	ECJ0EC1H100D	10P 50V	[M] *
C54	ECJ0EC1H100D	10P 50V	[M] *

Ref. No.	Part No.	Part Name & Description	Remarks
C55	ECJ0EC1H100D	10P 50V	[M] *
C56	ECJ0EC1H100D	10P 50V	[M] *
C57	ECJ0EC1H330J	33P 50V	[M] *
C58	ECJ0EB1C103K	0.01 16V	[M] *
C59	ECJ0EC1H100D	10P 50V	[M] *
C60	ECJ0EC1H100D	10P 50V	[M] *
C61	ECJ0EC1H100D	10P 50V	[M] *
C62	ECJ0EC1H100D	10P 50V	[M] *
C65	ECJ0EC1H330J	33P 50V	[M] *
C66	ECJ0EC1H330J	33P 50V	[M] *
C67	ECJ0EC1H100D	10P 50V	[M] *
C70	F3H0J227A090	220 6.3V	[M] *
C74	F1G1HR56A561	56 50V	[M] *GT
C75	F1G1H1R0A577	1 50V	[M] *GT
C80	F1G1HR56A561	56 50V	[M] *GT
C83	F1G1HR56A561	56 50V	[M] *GT
C85	F1G1H1R0A577	1 50V	[M] *
C86	F1G1H1R0A577	1 50V	[M] *
C87	F1G1H1R0A577	1 50V	[M] *
C88	F1G1H1R0A577	1 50V	[M] *
C1000	ERJ3GEY0R00V	0 1/16W	[M]
C1001	ECJ0EF1C104Z	0.1 16V	[M]
C1001	ERJ3GEY0R00V	0 1/16W	[M]
C1002	ECJ1VB1H104K	0.1 50V	[M]
C1003	ERJ3GEY0R00V	0 1/16W	[M]
C1004	ECJ1VB1C473K	0.047 16V	[M]
C1004	F2A1V4710036	470 35V	[M]
C1005	ECJ2FF1C475Z	4.7 16V	[M]
C1005	ERJ3GEY0R00V	0 1/16W	[M]
C1006	ERJ3GEY0R00V	0 1/16W	[M]
C1007	ECJ1VB1H104K	0.1 50V	[M]
C1008	ECJ2FF1C475Z	4.7 16V	[M]
C1009	ECJ0EF1C104Z	0.1 16V	[M]
C1009	F2A0J681A550	680 6.3V	[M]
C1011	F2A1V4710036	470 35V	[M]
C1012	ECJ1VB1H104K	0.1 50V	[M]
C1014	ECA0JAK101XB	100 6.3V	[M]
C1101	ECJ1VB1C473K	0.047 16V	[M]
C1102	ECJ0EF1C104Z	0.1 16V	[M]
C1103	ECJ1VB1C473K	0.047 16V	[M]
C1108	ECJ2FF1C475Z	4.7 16V	[M]
C1109	ECJ0EF1C104Z	0.1 16V	[M]
C1110	F3H0J227A090	220 6.3V	[M]
C1111	ECJ0EF1C104Z	0.1 16V	[M]
C1112	F3G0J107A035	100 6.3V	[M]
C1113	F3G0J476A029	47 6.3V	[M]
C1114	ECJ0EF1C104Z	0.1 16V	[M]
C1116	ECQV1H684JL3	0.68 50V	[M]
C1117	ECJ1VB1H104K	0.1 50V	[M]
C1118	ECJ1VB1H104K	0.1 50V	[M]
C1119	ECJ1VB1H104K	0.1 50V	[M]
C1216	ECQV1H684JL3	0.68 50V	[M]
C1217	ECJ1VB1H104K	0.1 50V	[M]
C1218	ECJ1VB1H104K	0.1 50V	[M]
C1219	ECJ1VB1H104K	0.1 50V	[M]
C1401	F3F1A226A047	22 10V	[M]
C1402	F3F1A226A047	22 10V	[M]
C1403	F3F1A226A047	22 10V	[M]
C1404	ECJ1VB1H104K	0.1 50V	[M]
C1405	ECJ3YB0J106M	10 6.3V	[M]
C1503	ECJ0EC1H100D	10P 50V	[M]
C1504	ECJ0EC1H100D	10P 50V	[M]
C1505	ECJ0EC1H100D	10P 50V	[M]
C1506	ECJ0EC1H100D	10P 50V	[M]
C1507	ECJ0EC1H100D	10P 50V	[M]
C1508	ECJ0EF1C104Z	0.1 16V	[M]
C1509	ECJ0EC1H101J	100P 50V	[M]
C1510	ECJ0EF1C104Z	0.1 16V	[M]
C1511	ECJ0EC1H101J	100P 50V	[M]
C1513	ECJ0EC1H101J	100P 50V	[M] GC
C1514	ECJ0EC1H101J	100P 50V	[M] GC
C2000	ECJ1VB1H104K	0.1 50V	[M]
C2000	F1G1H2R7A609	2.7P 50V	[M] GC

Ref. No.	Part No.	Part Name & Description	Remarks
C2001	ECA1EAM101XB	100 25V	[M]
C2001	F1G1H2R7A609	2.7P 50V	[M] GC
C2003	F1G1HR56A561	56 50V	[M] GC
C2005	ECJ1VB1H104K	0.1 50V	[M]
C2006	ECJ1VB1H104K	0.1 50V	[M]
C2010	ECA1EAM101XB	100 25V	[M]
C2011	ECJ1VB1H104K	0.1 50V	[M]
C2014	ECJ1VB1H104K	0.1 50V	[M]
C2015	ECJ1VB1H104K	0.1 50V	[M]
C3102	ERJ3GEY0R00V	0 1/16W	[M]
C3103	ECJ1VB1A474K	0.47 10V	[M]
C3104	ECJ1VB1A474K	0.47 10V	[M]
C3106	ECJ1VC1H101J	100P 50V	[M]
C3202	ERJ3GEY0R00V	0 1/16W	[M]
C3203	ECJ1VB1A474K	0.47 10V	[M]
C3204	ECJ1VB1A474K	0.47 10V	[M]
C3206	ECJ1VC1H101J	100P 50V	[M]
C5200	ECJ1VB1H104K	0.1 50V	[M]
C5201	ECJ1VB1H153K	0.015 50V	[M]
C5202	ECJ1VB1C224K	0.22 16V	[M]
C5203	ECJ2VC2A221J	220P 100V	[M]
C5204	ECJ1VB1H153K	0.015 50V	[M]
C5205	ECJ2VC2A221J	220P 100V	[M]
C5206	ECJ1VB1H104K	0.1 50V	[M]
C5207	ECJ3YB2A104K	0.1 100V	[M]
C5208	ECJ1VB1H104K	0.1 50V	[M]
C5209	ECJ1VB1H104K	0.1 50V	[M]
C5210	ECJ3YB2A104K	0.1 100V	[M]
C5211	ECJ2VC2A221J	220P 100V	[M]
C5212	ECJ1VC1H221J	220P 50V	[M]
C5213	ECJ1VB1H104K	0.1 50V	[M]
C5214	ECJ1VB1H104K	0.1 50V	[M]
C5215	ECJ3YB2A104K	0.1 100V	[M]
C5216	ECJ1VB1H331K	330P 50V	[M]
C5218	ECJ2VC2A221J	220P 100V	[M]
C5219	ECJ3YB2A104K	0.1 100V	[M]
C5220	ECJ1VB1H104K	0.1 50V	[M]
C5221	ECJ1VB1H102K	1000P 50V	[M]
C5222	ECJ1VB1A474K	0.47 10V	[M]
C5223	ECJ1VB1A474K	0.47 10V	[M]
C5224	ECJ1VB1H331K	330P 50V	[M]
C5231	ECJ1VB1H102K	1000P 50V	[M]
C5232	ECJ1VB1A474K	0.47 10V	[M]
C5233	ECJ1VB1A474K	0.47 10V	[M]
C5234	ECJ1VB1H102K	1000P 50V	[M]
C5240	F2A1J470A050	47 63V	[M]
C5522	ECJ1VB1H104K	0.1 50V	[M]
C5523	ECJ1VB1H104K	0.1 50V	[M]
C5602	ECA1CAK100XB	10 16V	[M]
C5603	ERJ3GEY0R00V	0 1/16W	[M]

22.2. Parts List (SH-FX65T)

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUITS	
IC1	C1CB00001841	IC TRANSFER SWITCH	[M] *
IC3	C0DBZYY00262	IC 3.3V REGULATOR	[M] *
IC10	C1AB00002772	IC BASE BAND	[M] *
IC13	C1CB00002648	IC RF	[M] *
IC1000	C2BBED000056	IC MCU	[M]
IC1102	C0DBZGC00067	IC 3.3V REGULATOR	[M]
IC1103	C0DBZGC00067	IC 3.3V REGULATOR	[M]
IC1105	C1BB00001071	IC POWER ON RESET	[M]
IC1300	C0FBAK000019	IC AUDIO ADC	[M]
IC2000	LDB212G4010C	IC BALUN	[M] GC
IC2001	RFLPF2012110	IC LPF	[M] GC
		TRANSISTORS	
Q1101	B1GBCFJJ0051	TRANSISTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
		DIODES	
D1101	B0JCAE000001	DIODE	[M]
D1102	B0JCAE000001	DIODE	[M]
		COILS & TRANSFORMERS	
L15	FIG1HR56A561	INDUCTOR	[M] *
L16	G1C3N9ZA0068	INDUCTOR	[M] *
L17	G1C3N9ZA0068	INDUCTOR	[M] *
L20	G1C4N7ZA0068	INDUCTOR	[M] *
L21	G1C4N7ZA0068	INDUCTOR	[M] *
L1101	ERJ2GEOR00X	CHIP JUMPER	[M]
Y1	H0J122500037	CRYSTAL	[M] *
Y2	H0J220500001	CRYSTAL	[M] *
		WIRES	
W1	ERJ6GEYOR00V	CHIP RESISTOR	[M] *
W3	ERJ6GEYOR00V	CHIP RESISTOR	[M] *
W4	ERJ6GEYOR00V	CHIP RESISTOR	[M] *
		RESISTORS	
R1	G1C2N7ZA0068	INDUCTOR	[M] *
R4	ERJ2GEJ823X	82K 1/32W	[M] *
R5	ERJ2GEJ100X	10 1/32W	[M] *
R6	G1C2N7ZA0068	INDUCTOR	[M] *
R7	ERJ2GEJ103X	10K 1/32W	[M] *
R8	ERJ2GEJ182X	1.8K 1/32W	[M] *
R9	ERJ2GEJ102X	1K 1/32W	[M] *
R10	ERJ2GEJ182X	1.8K 1/32W	[M] *
R11	ERJ2GEJ102X	1K 1/32W	[M] *
R13	ERJ2GEJ103X	10K 1/32W	[M] *
R15	G1C47NJA0048	INDUCTOR	[M] *
R18	ERJ2GEJ103X	10K 1/32W	[M] *
R19	ERJ2GEJ182X	1.8K 1/32W	[M] *
R21	ERJ2GEOR00X	0 1/32W	[M] *
R22	ERJ2GEJ102X	1K 1/32W	[M] *
R24	ERJ2GEJ682X	6.8K 1/32W	[M] *
R25	ERJ2GEJ182X	1.8K 1/32W	[M] *
R26	ERJ2GEJ102X	1K 1/32W	[M] *
R27	ERJ2GEJ103X	10K 1/32W	[M] *
R28	ERJ2GEJ222X	2.2K 1/32W	[M] *
R38	ERJ2GEOR00X	0 1/32W	[M] *
R39	ERJ2GEOR00X	0 1/32W	[M] *
R41	ERJ2GEJ103X	10K 1/32W	[M] *
R43	ERJ2GEOR00X	0 1/32W	[M] *
R44	ERJ2GEOR00X	0 1/32W	[M] *
R45	ERJ2GEJ100X	10 1/32W	[M] *
R46	ERJ2GEOR00X	0 1/32W	[M] *
R47	ERJ2GEOR00X	0 1/32W	[M] *
R1001	ERJ2GEJ472X	4.7K 1/32W	[M]
R1002	ERJ2GEJ472X	4.7K 1/32W	[M]
R1003	ERJ2GEJ103X	10K 1/32W	[M]
R1004	ERJ2GEJ103X	10K 1/32W	[M]
R1005	ERJ2GEJ103X	10K 1/32W	[M]
R1006	ERJ2GEJ222X	2.2K 1/32W	[M]
R1007	ERJ2GEJ103X	10K 1/32W	[M]
R1009	ERJ2GEOR00X	0 1/32W	[M]
R1012	ERJ2GEOR00X	0 1/32W	[M]
R1013	ERJ2GEOR00X	0 1/32W	[M]
R1014	ERJ2GEJ331X	330 1/32W	[M]
R1017	ERJ2GEOR00X	0 1/32W	[M]
R1018	ERJ2GEOR00X	0 1/32W	[M]
R1019	ERJ2GEOR00X	0 1/32W	[M]
R1020	ERJ2GEOR00X	0 1/32W	[M]
R1021	ERJ2GEOR00X	0 1/32W	[M]
R1022	ERJ2GEJ331X	330 1/32W	[M]
R1027	ERJ2GEJ103X	10K 1/32W	[M]
R1101	ERJ2GEJ102X	1K 1/32W	[M]
R1102	ERJ2GEJ103X	10K 1/32W	[M]
R1103	ERJ2GEJ103X	10K 1/32W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R1104	ERJ2GEOR00X	0 1/32W	[M]
R1105	ERJ2GEOR00X	0 1/32W	[M]
R1106	J0JCC0000278	INDUCTOR	[M]
R1107	ERJ2GEOR00X	0 1/32W	[M]
R1108	ERJ2GEJ103X	10K 1/32W	[M]
R1109	ERJ2GEJ103X	10K 1/32W	[M]
R1110	ERJ2GEJ273X	27K 1/32W	[M]
R1111	ERJ2GEJ473X	47K 1/32W	[M]
R1112	ERJ2GEOR00X	0 1/32W	[M]
R1114	ERJ2GEOR00X	0 1/32W	[M]
R1115	ERJ2GEOR00X	0 1/32W	[M]
R1119	J0JCC0000166	INDUCTOR	[M]
R1301	ERJ2GEJ102X	1K 1/32W	[M]
R1302	ERJ2GEJ102X	1K 1/32W	[M]
R1303	ERJ2GEJ473X	47K 1/32W	[M]
R1304	ERJ2GEJ473X	47K 1/32W	[M]
R1305	ERJ2GEOR00X	0 1/32W	[M]
R1306	ERJ2GEOR00X	0 1/32W	[M]
R1500	ERJ2GEJ330X	33 1/32W	[M]
R1501	ERJ2GEJ330X	33 1/32W	[M]
R1502	ERJ2GEJ330X	33 1/32W	[M]
R1503	ERJ2GEJ330X	33 1/32W	[M]
R1504	ERJ2GEJ330X	33 1/32W	[M]
R1505	ERJ2GEJ330X	33 1/32W	[M]
R1506	J0JCC0000278	INDUCTOR	[M]
R1507	ERJ2GEOR00X	0 1/32W	[M]
		CAPACITORS	
C1	ECJ0EC1H101J	100P 50V	[M] *
C3	F3G0J107A035	100 6.3V	[M] *
C5	ECJ0EF1C104Z	0.1 16V	[M] *
C7	ECJ0EF1C104Z	0.1 16V	[M] *
C8	ECJ0EC1H101J	100P 50V	[M] *
C9	ECJ0EB1C103K	0.01 16V	[M] *
C10	ERJ2GEJ103X	10K 1/32W	[M] *
C11	ECJ0EB1C103K	0.01 16V	[M] *
C12	ECJ0EC1H101J	100P 50V	[M] *
C13	ECJ0EB1E681K	680P 25V	[M] *
C14	ECJ0EC1H220J	22P 50V	[M] *
C15	F1G1H4R7A564	4.7P 50V	[M] *
C17	ECJ0EC1H100D	10P 50V	[M] *
C18	ECJ0EB1C103K	0.01 16V	[M] *
C19	F3G0J107A035	100 6.3V	[M] *
C20	ECJ0EB1C103K	0.01 16V	[M] *
C21	ECJ0EB1C103K	0.01 16V	[M] *
C22	ECJ0EB1A473K	0.047 10V	[M] *
C23	ECJ0EB1A473K	0.047 10V	[M] *
C24	ECJ0EB1A473K	0.047 10V	[M] *
C25	F3F0J475A077	4.7 6.3V	[M] *
C26	ECJ0EB1A473K	0.047 10V	[M] *
C27	ECJ0EC1H100D	10P 50V	[M] *
C28	ECJ0EC1H101J	100P 50V	[M] *
C29	ECJ0EC1H101J	100P 50V	[M] *
C30	ECJ0EB1C103K	0.01 16V	[M] *
C31	ECJ0EF1C104Z	0.1 16V	[M] *
C32	F1J1A106A041	10 10V	[M] *
C33	ECJ0EB1C103K	0.01 16V	[M] *
C34	ECJ0EB1C103K	0.01 16V	[M] *
C36	ECJ0EB1C103K	0.01 16V	[M] *
C37	ECJ0EB1C103K	0.01 16V	[M] *
C38	ECJ0EC1H330J	33P 50V	[M] *
C39	ECJ0EC1H100D	10P 50V	[M] *
C40	F1G1H2R2A609	2.2P 50V	[M] *
C41	ECJ0EB1C103K	0.01 16V	[M] *
C42	ECJ0EB1C103K	0.01 16V	[M] *
C43	ECJ0EC1H150J	15P 50V	[M] *
C44	ECJ0EC1H100D	10P 50V	[M] *
C45	ECJ0EC1H100D	10P 50V	[M] *
C46	ECJ0EC1H220J	22P 50V	[M] *
C47	ECJ0EC1H330J	33P 50V	[M] *
C48	ECJ0EC1H330J	33P 50V	[M] *
C49	ECJ0EC1H470J	47P 50V	[M] *
C51	ECJ0EF1C104Z	0.1 16V	[M] *

Ref. No.	Part No.	Part Name & Description	Remarks
C52	ECJ0EC1H100D	10P 50V	[M] *
C53	ECJ0EC1H100D	10P 50V	[M] *
C54	ECJ0EC1H100D	10P 50V	[M] *
C55	ECJ0EC1H100D	10P 50V	[M] *
C56	ECJ0EC1H100D	10P 50V	[M] *
C57	ECJ0EC1H330J	33P 50V	[M] *
C58	ECJ0EB1C103K	0.01 16V	[M] *
C59	ECJ0EC1H100D	10P 50V	[M] *
C60	ECJ0EC1H100D	10P 50V	[M] *
C61	ECJ0EC1H100D	10P 50V	[M] *
C62	ECJ0EC1H100D	10P 50V	[M] *
C65	ECJ0EC1H330J	33P 50V	[M] *
C66	ECJ0EC1H330J	33P 50V	[M] *
C67	ECJ0EC1H100D	10P 50V	[M] *
C70	F3H0J227A090	220 6.3V	[M] *
C74	F1G1HR56A561	0.56 50V	[M] *
C75	F1G1H1R0A577	1P 50V	[M] *
C80	F1G1HR56A561	0.56 50V	[M] *
C83	F1G1HR56A561	0.56 50V	[M] *
C85	F1G1H1R0A577	1 50V	[M] *
C86	F1G1H1R0A577	1 50V	[M] *
C87	F1G1H1R0A577	1 50V	[M] *
C88	F1G1H1R0A577	1 50V	[M] *
C1001	ECJ0EF1C104Z	0.1 16V	[M]
C1004	ECJ1VB1C473K	0.047 16V	[M]
C1005	ECJ2FF1C475Z	4.7 16V	[M]
C1008	ECJ2FF1C475Z	4.7 16V	[M]
C1009	ECJ0EF1C104Z	0.1 16V	[M]
C1101	ECJ1VB1H104K	0.1 50V	[M]
C1102	ECJ0EF1C104Z	0.1 16V	[M]
C1103	ECJ1VB1C473K	0.047 16V	[M]
C1108	ECJ2FF1C475Z	4.7 16V	[M]
C1109	ECJ0EF1C104Z	0.1 16V	[M]
C1110	F3H0J227A090	220 6.3V	[M]
C1111	ECJ0EF1C104Z	0.1 16V	[M]
C1112	F3G0J107A035	100 6.3V	[M]
C1113	F3G0J226A036	22 6.3V	[M]
C1114	ECJ0EF1C104Z	0.1 16V	[M]
C1301	F3F1A226A047	22 10V	[M]
C1302	F3F1A226A047	22 10V	[M]
C1303	F3F1A226A047	22 10V	[M]
C1304	ECJ1VB1H104K	0.1 50V	[M]
C1305	F3F1A226A047	22 10V	[M]
C1306	ECJ1VB1H104K	0.1 50V	[M]
C1307	F3F1A226A047	22 10V	[M]
C1308	ECJ1VB1H104K	0.1 50V	[M]
C1503	ECJ0EC1H100D	10P 50V	[M]
C1504	ECJ0EC1H100D	10P 50V	[M]
C1505	ECJ0EC1H100D	10P 50V	[M]
C1506	ECJ0EC1H100D	10P 50V	[M]
C1507	ECJ0EC1H100D	10P 50V	[M]
C1508	ECJ0EF1C104Z	0.1 16V	[M]
C1509	ECJ0EC1H101J	100P 50V	[M]
C1510	ECJ0EF1C104Z	0.1 16V	[M]
C1511	ECJ0EC1H101J	100P 50V	[M]
C1512	ECJ0EC1H220J	22P 50V	[M]
C1513	ECJ0EC1H220J	22P 50V	[M]